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Yojana

The Keynesian relevance

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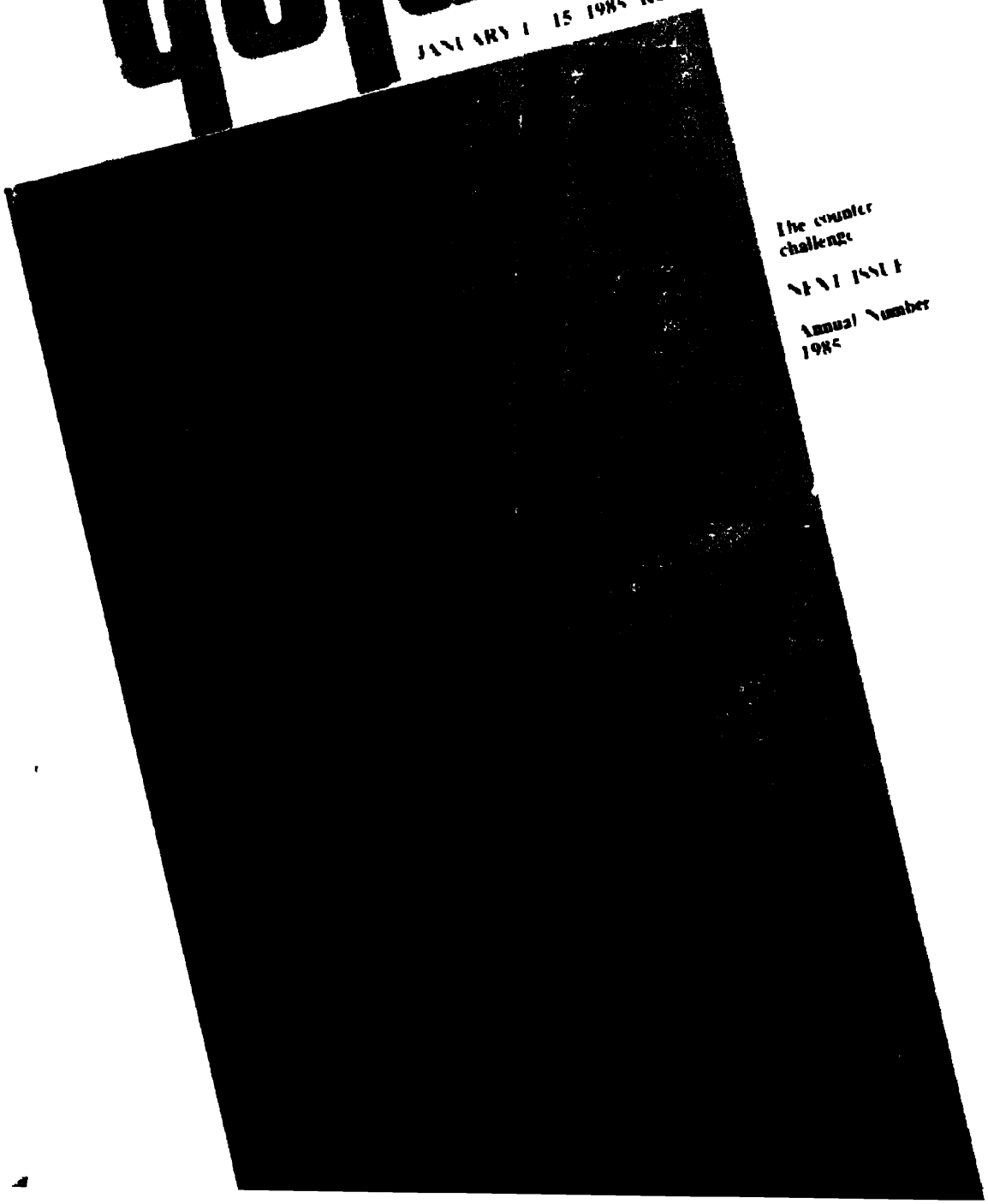

The counter challenge

NEXT ISSUE

Annual Number 1985

THE FIRST PUBLIC SECTOR UNDERTAKING to produce vital drugs in the country completed 40 years of successful working in 1984.

Hindustan Antibiotics Pimpri near Pune was started in 1954 to manufacture drugs like Penicillin, Ampicillin and Gentamycin. Gradually, it expanded to manufacture Hamycin an antibiotic Aureofungin a fungicide used in the control of plant diseases and the Nanex kit for early detection of pregnancy.

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Value of production, which was Rs. 13.38 crores in 1976-77 is expected to touch Rs. 45 crores in 1984-85. During 1983-84 export earnings were to the tune of Rs. 77 lakhs. ❑

YOJANA

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TESTING VOLUNTARY AGENCIES

The counter-challenge from S. K. Dey

In this spirited narrative, S. K Dey, the former Union Minister for Community Development and Cooperation, blames 'Yojana' for 'under-stressing' the 'spirit' of voluntarism and making matter alone the core of its quest in its November Special, "Testing voluntary agencies" In this 'counter-challenge', he makes out a strong case for a very distinctive role of voluntary agencies in creating, what he calls a "Forum for Freedom"—as a people's movement to counter hypocrisy and build up life style which is in perfect harmony with the quintessence of Indian philosophy—"every soul is potentially divine"

'YOJANA' NOVEMBER SPECIAL, "Testing voluntary agencies", carried a review of voluntary action from many fronts The issues discussed have been comprehensive as regards implementation of programmes in or outside the plan No doubt the subject will be examined threadbare But a view in retrospect leads one to suspect, as if matter alone had been the core of the quest thus far Matter however can only follow when preceded by the spirit The latter perforce must acquire the priority in the quest more particularly, as far as voluntary action is concerned But this it is feared, has been understressed if not altogether missed

The current article with initiative induced from the Chief Editor's editorial in the issue is being offered therefore as a counter-challenge The hope is that this may accelerate the impulse to dip within afresh and perhaps also to chisel the concept into shape for effective translation into practice This aspect has seemingly been a relatively low priority in the eyes of the Planning Commission Should not the Commission with 'Yojana' its organ, be amongst the prime movers in this behalf ? It was so once in 1952, when the community development programme, since buried, had been spearheaded under the central committee created round the Planning Commission

This evolution

Human being as a superior animal is claimed to have evolved around a hundred thousand to a million years back No living creature even a rogue, can live by oneself alone Therefore society evolved and spread in slow but steady steps as a process over time It has already passed through the tribal, feudal, capitalist, communist and the socialist patterns The multitude of permutation and combination, in between, could perhaps be ignored for the time being Life must therefore be accepted as a process rather than an end Perfection at any stage or in any form, will be a fiction We may also, for the purpose of this note leave alone God, Providence or any other force governing individual life One must however not fail to recognise that there is a cosmic law which governs conduct, balance and the totality that composes the cosmos This would appear beyond question, no matter from what angle one views it. That there has to be change inexorably in shape and character whether of matter, mind or spirit over time, looks equally certain. For, there can be no room for life or matter, that can stand static. Therefore "shangrilla" must be kept in reserve for dreams Change, an ever organic process, must be given precedence in thinking and planning.

To hold the animal man within his tether, and to prevent him from encroaching on the rights of others, religion, rituals, dress, language, art, culture and the like have all emerged in their virtually endless manifestation in diversities and richness. Political, economic and social systems have evolved to suit geography, ethnology and ecology of life that prevails in a fantasy of variations After the relatively primitive stage of life had been outgrown, the new age of politics came to play its role It evolved again from piracy, plunder, pillage and conquests to colonialism The first and second World Wars virtually sealed the end of the colonial era but for minor exceptions such as South Africa and a few others These continue to flicker for a time, as a hang-over of the past But, man the animal, is still not free of the fetters that bound him over the ages. Colonialism even though ended is taking increasingly the guise of neo-colonialism on a much wider front

And the new virus

The new virus demands urban areas colonising over the rural The growing elite of the cities have their umbilical brotherhood in the erstwhile colonial West with the neutral Swiss Banks acting as the smiling brokers in between The old system has but taken cloaks to promote harlotry in many shapes and forms The international brotherhood of the "haves" who are few but growing, and the pillaged and raped—the many—who are the "have nots", predominantly though in the developing nations, reflect the new drama rolling across the world stage The body of man has grown in its powers, thanks to new science and technology, adding to his grasp and control of matter His heart seems somehow to be in a state of steady shrinkage retreat and decline, virtually in inverse proportions Instead of being the tools for furtherance of, and well being in life, science and technology appear to be growing into monsters clasping man in the tentacles of an octopus His powers of killing and extermination eclipse the devils in fables The increasing depredation and devastation, he has begun to cause to other forms of life minus all mercy, not to mention empathy, is a cruelty beyond all definitions Man seems today to be the only species in life, in the desperate march towards annihilation of himself and perhaps also of life as a whole off the earth The spirit of man sinks in direct proportion as he begins climbing high and higher, with implications of war from space

Politics in the world has thus begun to put on totally new garments Feudalism built a culture that had been selective in kind, capitalism with its corollary of colonialism led to a culture selective in space The insatiable appetite that colonialism brought in its wake, along with capitalism, gave birth to communalism—as its counter weight in the style of an eliminative challenge mutually The two systems are now at their apieces, struggling to divide the world evenly between them, through proxies to start with Capitalism seeks total freedom for the individual to earn, amass and squander leading to exploitation of the many outside the charmed circle, both at home and abroad. Communism offers the basic needs such as food, clothing and shelter to all, but denies totally the freedom to differ with the system that rules. Admittedly, there would not perhaps be even a talk world wide over mass eradication of poverty, had communism not held the threat as a champion of the poor and deprived Strangely, the two systems coexist in even competition, even though they cannot but be at war One holds the torch of freedom but leads to gross exploitation, the other offers alleviation of mass poverty but threatens the freedom of man What can guarantee the survival of man as a species in the absence of a force that can weld the "pluses" and eliminate the "minuses", in the two systems biologically so opposed to each other ?

A crippled democracy

Democracy as a political system, which we too aim at in India is getting increasingly crippled under a hypocrisy more stunning than one can conceive The game of dice has already gone beyond the capacity of the good and the decent in society to umpire. Not even the most radical of amendments to our Constitution can bring about a change in the character of the system, if the record of amendments since inception, is to be an honest criterion A fifth estate alone could act as the countervailing force It was called the 'Estate of the people" But that can act as another temple added to the Indian Pantheon The dire need of the hour for survival with sanity, is a "Forum for freedom" The animal man must grow to be the free sovereign he had been designed by nature to be, whether in muscles, nerves, mind or heart, here and every where This cannot be brought about by the competitive political, economic and social systems now at play Nor can the ghosts in the systems be exercised by any means feasible The systems can be made subservient to the people, only if they can be subject to the unrelenting pressure of enlightenment and measures such as can countervail Such a force for freedom and objectivity must grow from the grass-roots It must be non partisan, as regards party politics It must be non-competitive and humane, totally and comprehensively What could be its terms of reference and who could serve it as an ever renewing forum and how ? Before these aspects may be examined some further scanning of the crisis and the environment is called for

Power is a gravitational force of the mightiest kind ever alive to its exercise whether in mind or matter It calls for taming, if it were not to be self-annihilative It has to be held in balance between the biologically opposite pulls—one towards total autocracy, the other towards utter anarchy Autocracy, because of its centrepetal pull, can lead but to exponential growth in arms and armed forces Police, Intelligence, bureaucracy, public sector so-called, and politics as commerce. One need not go very far to have a view of the growing "Black dwarf" in the current context of science and technology One can also see as a corollary, the conscription of scarce resources and the circumscription in the rights and well being of people that follow as a natural course One can hardly grudge the fears and complaints of neighbours. Nor need one wonder over the tragedy of it all in its ultimate and, whether in the first and second world wars,

and what has followed in our own sub-continent, ever since Independence till yesterday.

Nehru's warning

As regards anarchy, that too we have had and seen in ample measures throughout history, upto the times that are current. The author had a near midnight interview with Nehru early May, 1964. Nehru appeared to have been in a mood of grave introspection. He stated in categorical terms, that minus a counterforce such as could extend effective authority, responsibility, resources and competence down to the grass roots, and sustained so through enlightened vigilance by people, our freedom would be in grave peril. The long struggle for "Independence" had been won with glory. The battle for "freedom" had hardly begun. The prophecy went far beyond what even he could then imagine.

Twenty years after Nehru is no more, we discover to our horror, that there are hardly any basic differences in practice, even rhetorics, between political parties from the crowning one to the near cipher. They appear interchangeable who ever come to occupy the 'Totem" seat of power anywhere in this yet feudal society Is it any wonder, that Gandhi's last testament was the abolition of the Congress, as a political party and its transformation following Independence to a "Lok Sevak Sangh" ? His life, motto of Swaraj was—"not the concentration of authority in a few but the acquisition of the capacity in the many to regulate authority when abused" Throughout his struggle, he had put "power to the people" as the key to the swaraj to which he had pledged his life Monolith of power was a horror to him Following the precept of Gandhi, Nehru pursued, with his heart fully pledged to Panchayati Raj, Sahakari Samaj and Samuhik Vikas as the triple system for transfer of power secured from the British, back to the people, as the legatees to shoulder it. The manifesto for Samuhik Vikas early 1952, included the sanction for the "right to life" as a core in a single sentence approved by himself with support from the Planning Commission and allied ministers present What followed after him, is open for the people to see and ponder !

A 'forum for freedom'

The intervening years since, have brought out transparently, what can happen when power descends without a counterweight whether at the apex or down below A "Forum for freedom" as the fifth estate for our democracy is therefore an imperative as deterrent to abuse of authority, wherever it occurs from the national capital down to the people Even short of a forum of the kind, we have seen what could really happen in the creation of the Andhra State, and how the supreme power had to bend its head down before the will of a people alert, awake and determined, only in recent months We have also seen what a relatively little country--North Vietnam with its rudimentary arms, but elemental will did to bring the mightiest of power on earth to bend its head down, and seek a way of retreat and escape for itself. But the will alone is not enough How do a people secure immunity against mass hypnotism, no matter of what kind ? We must necessarily come to an institutional pattern, perhaps of a totally different kind. "Lok Sevak Sangh" implied plans and programmes of action. But at the current phase of development in the country, plans and actions must initiate and flow through government. Panchayati Raj, Sahakari Samaj and functional institutions of democracy of varying kinds based on voluntary action by the various sectors of the community, must play their appropriate role. How do we enable the many ' to acquire the capacity to regulate authority when abused, as prescribed by Gandhi ? There can be no short cut to this consummation, nor is there a talisman. This has to be a living process, renewing and perpetuating itself such as nature.

What it means

We come back inescapably to the 'Forum for freedom". The forum must work for a triple charter of rights— to live', 'to work" and "to receive what is earned". The rights must be backed by a triple tenet of faith— muscles can do it , muscles can be trained to do it ' and ' conditions can be created to do it '. These are not stated here as rhetorics. These have been tried out soon after August 15, 1947 and tested on a limited scale, under Nehru himself. The camp concerned, consisted of a group of people out of those displaced from Pakistan. They were asked to work out their destiny, guided and inspired by themselves, with support and assistance from Government headed by him. One of these human laboratories—a living rural-cum urban township still survives flourishing and totally free of the communal virus, skirmishes and bitterness that tarnished this land, to a near disaster in recent days.

India despite her legends in the long past, is caught in the whirlpool today that shakes the world throughout. This has been seen, examined and reported on, by the author following his odyssey across the world, on behalf of the United Nations, some years back Politics, economics and sociology as a whole suffer from grave distortion as the product of "two nations within nations" Slowly but steadily the world is being driven to the abyss that stares not very far ahead No political party known in India today, has the integrity, dynamism and earnestness, to comprehend in the blood flowing in their veins, the dilemma facing mankind for its survival as the latest in evolution.

A people's organ

A new organ of people is therefore an imperative, if there is even to be an effort towards liberation of man to "freedom". It must eschew office totally in politics in any form, and so also hypocrisy so typical and ancestral in our tribe ! Men and women, especially the elders with spine still erect, have had anxiety with the past of our politics. They are crying all across India, for a creative outlet for their yet unspent talents, elan and verve. They can be expected truly, to be not purchasable any more at any cost. The must also include exclusive professionals, especially in the faculties whether in the academies, universities

including agro-ones in particular. It must also invite great people, not hand slaves for wages, but with their feet on the Indian soil, willing to accept hardness and offer support moral and material to the new movement as it grows. There wait growing armies of youth, in body, mind and heart, who crave and cry to take up extra-curricular work outside their work-a-day life. They are to give, what is its own return, as used to be the code for youth in the ages long behind. They are sick and tired of the parody of politics that has been at play over the years. This group must swear, as precondition to their membership, as they will with a smile, to abjure politics of partisanship in any form for a minimum of ten years following enrolment.

And the task before it

The programme must be totally free of violence in thoughts as well as actions. It could be based on good-will to all and malice to none. The character of the effort, and the direction it should take on its own, will emerge, when the forum comes into existence and begins its quest. Money is of little consequence. It flows like water for a cause that is real. What is acutely in short supply today is character, competence, and commitment blended together.

The forum, to start with, must confine itself to the down and out of centuries, in the rural heartland as well as those struggling and suffering in the growing urban slums virtually minus air, water, leave alone shelter or work. The manifestation of poverty, degradation and denials mounts despite massive efforts and plans professed on behalf of the government and our wealthy "do-gooders" ! The forum for freedom must prove welcome as a voluntary organ. It must ask nothing for itself from government. It must demand honest extension of what government plan and implement. It must have the right to act as a counter-weight to expose where, why and how betrayal occurs. This can be hailed as a new battle of "Kurukshetra" open to the aged and the youth. The middle rank in between may be left alone in bulk, to fend for themselves as they wish, in the current elusive age of "quick rise" in life and status.

"Arise" and "awake"

The elders, who volunteer to plunge into the new battle with their mind and heart as the only weapons, must offer "pind" themselves in their own name at the Falgu river bed alongside Gaya or in the Ganga at Haridwar. The Pandas, according to experience, refuse "Pind" for those still living. The elders must reinforce and stretch their lives as long as they can, to burn themselves in and out rather than exist dumb and mute, to rust and wither away as hapless straws in the wind. The crusade will have the quiet blessing of Gandhi and Nehru. It will draw, from further back, the "libido" of Gautama Buddha. It will attune the spark of Shankara with the latter's clarion call of "Sho ehum" (I am He) who parted with his body after his quest was over, when aged thirty. His spirit would lend the magnetic fuel to the process of transformation in our character, from shadows and mirage to reality. The call of the hour is character to outgrow the millstone of feudalism that has corroded the soul and soil of India over the ages.

When the spirit of India looked totally bleak, a hundred years back, there sprang up a lone pilgrim. He trekked alone across the land mass from Kashmir to Kanyakumari, Cutch to Naga Hills. He sailed as the unknown monk to the International Congress of religions at Chicago, minus the means, even the invitation. "Every soul is potentially divine" is the quintessence of Indian philosophy, that thundered across the continents. The never dimmed fire spread across India, even after Vivekananda closed his breath, aged 40, in deep meditation. "Arise, awake, halt not till the goal is reached" was the message that continues echoing across the horizon. The same mission fuelled Gandhi, Nehru and many a known and unknown musafir, that fought and still fight for the soul of India "to arise" and "awake". This alone can detonate the explosion to survival. This alone can ensure peace, amity and balance as primal laws in the ecology. Man alone is still unfree, while all other forms of life, co-exist in relative "freedom" with hardly any cannibalism within the individual ranks of the species. □

"Talking" bus stop

A "TALKING" BUS STOP—known as ELSIE (electronic speech information equipment)—designed to help blind and partially sighted bus passengers has just been launched in Britain.

The equipment, which can be fitted to an ordinary bus stop, uses a microprocessor and speech synthesis techniques to store and announce information on bus routes and times at each stop. ELSIE will also tell waiting passengers the number of an approaching bus.

The system has been developed by engineers at the U.K. Transport Department's Traffic Control and Communications Division in Bristol, Western England, at the suggestion of blind and partially sighted people. □

Fully export-oriented units exempted from custom duty

UNDER THE HUNDRED PER CENT export-oriented unit scheme, various goods including capital goods, raw materials, components, spares etc. are allowed to be imported free of customs duty provided the finished products is exported out of India. Government have decided to allow supply of products of hundred per cent units to Oil and Natural Gas Commission (ONGC) projects against global tenders.

It has also been decided by the Government to exempt from customs duty, capital goods, raw materials, components, spares etc. imported for the manufacture of products for such supplies to ONGC. □

The keynesian relevance

S. K. Ray

o mark the centenary celebrations of John Maynard Keynes (1883-1946) *the author here discusses the relevance of Keynesian economics which changed the course of worldwide history in the development of economics in terms of its utilitarian aspects in respect of policy and state craft. Keynes helped economics to graduate from the micro-views of particular situations to the national or international macroscope of aggregate economic forces and nationwide socio-economic flows at play. The second part of the article, to be carried in the next issue, will discuss the Keynesian relevance in the third world.*

THE INFLUENCE OF John Maynard Keynes on the economic theory and policy of today's world is stupendous. Even though Keynes started as an economist of war and peace, taking upon himself the task of delineating the economic principles of post-war reconstruction, principally as relevant to the problems of contemporary Britain, he had eventually struck oil in his treatise, *The General Theory of Employment, Interest and Money*. In his magnum opus, Keynes developed socio-economic concepts at the macro-scopic level relating to consumption, saving, spending, investment and employment, which, in this time and age, have assumed profound meaning in respect of the principles governing the economics of growth and development.

It is in this respect that the Keynesian emergence has come to assume particular relevance to the economics of the third world. It is our objective in the present dissertation, while analysing, may be for the umpteenth time, some of the cornerstones of the Keynesian economic principles, to identify their applicability and relevance to the developing economies of the third world.

The Keynesian revolution in the economic literature came up principally in the background of the British economy, in the context of the great depression of the thirties, the massive war-efforts leading to various degrees of indexing or extreme privations in consumption and forced savings in order to generate investment and, finally, to attend to the post-war requirements of the economics of reconstruction. Considered against this background it may perhaps be almost a sacrilege to suggest (which, of course, it is our intention to do), that the Keynesian concepts are of great significance to the developing economies of the third world.

Sacrilege or not

But so they are, I believe, sacrilege or not. Keynes dwelt on the problem of long-term (secular) stagnation and the Hobsonian principles of under-consumption, contested the rather over-simplified Pigovian correlation between wages and employment, rationalised the economic principles of under-employment, national spending, investment and national income; and graduating from his economic principles of propensity to consume, liquidity preference, the rates of interest and dividend, and other variables, he eventually evolved the principles on the basis of which the state could function as a programming agent for sponsoring spending, investment, production, employment, consumption and national income. All these concepts and formulations are extremely significant to the third-world developing economies.

It is my belief, therefore, that Keynes, while attending to the problems of the pre-war depression, war-time privation and post-war reconstruction of

the British Isles, may be put up much as a conscious effort as by the progressive development of the forces of national thinking, was all the while laying down the infrastructure of the economic principles that would eventually come to govern the developing economies of today's third world.

Except perhaps for David Ricardo, no other economist may possibly have had so much influence on the public economic policy within his own lifetime and within a few decades thereafter. The contribution of Keynes in the substantive, theoretical and practical contents of economics has in the post-Keynesian decades been discussed as the Keynesian emergence, the Keynesian revolution or an altogether new economics.

The new economics, which has developed with, upon and around the Keynesian economics, principally on the basis of and as a sequel to Keynes' General Theory, is actually the significant Keynesian evolution of the twentieth century, a revolution which has transformed economics from an interpretation of the economic phenomena at work into also, in the bargain, a esoteric science that not only interprets but also determines, and oftentimes propels, the socio-economic forces and phenomena at work in the national economy towards the realisation of certain national objectives.

Three major shifts

In the process, Keynes accomplished three major shifts in economic thinking. First, he promoted economics from a study of particular prices or values or circumstances to flows or aggregates in respect of wages, employment (or unemployment), money, consumption, investment and income. Thus Keynes helped economics to graduate from the micro-views of particular situations to the national or international macroscope of aggregate economic forces and nation-wide socio-economic flows at play.

Secondly, Keynes introduced, with considerable success, extensive pragmatism in economic theorisation. In the field of socio-economic developments, Keynes focused a flood of limelight on a catalytic agency in the shape of the state, the policies of which could make or mar the projected or programmed economic growth of a country or a cluster of them, affiliated by a common policy or management-standard or economic objective. This was principally how Keynes transformed economics into a vehicle of public policy, and thereby one of the most utilitarian sciences of today's world.

Finally, economics, beginning with the Keynesian formulations, and in its pursuit of the public-policy deliberations, has eventually identified its links with politics and, therefore, economic management in today's world has clearly identifiable areas of overlap with political management.

Beginning with the Keynesian break-away from the traditional gold standard to opt for the later political monetary currency, to today's monetary and developmental programmes, from the Bretton Woods covenants to today's world monetary management monitored by the International Monetary Fund, the World Bank et al., economics and politics, as Keynes foresaw, are at the level of the world-wide or even country-wise macro-economy, getting steadily but increasingly fused and/or intermingled with each other, over large tracts of national and international economic phenomena.

Third-world economies

More than ever before, these Keynesian shifts in the evolution of economic policy, in our opinion, are relevant today in the context of the emergence of the policy-framework on economic growth in the developing economies, more than most. What is basically wrong with most of these economies, is principally the failure in the formulation of the state-policy on economic growth to break the barriers of micro-developments, and to promote the economy into the realm of macro-growth of optimum aggregate development.

It is also being increasingly appreciated that in the matter of economic growth, the principal activist role will of necessity be of the state. It is the state which will have to discover and determine the links between the objectives and patterns of economic growth, on the one hand, and the socio-political-economic ideology of the government and the people, on the other.

In the context of the third world, it may be worthwhile to appreciate, yet once again, the emphasis in Keynesian literature on the importance of the statecraft in economics, which pursuant to his General Theory became the hand-maiden of political and administrative management. By the 'thirties and 'forties' and what with the booms and depressions, the value theory slowly but certainly gave way to the Keynesian concepts of costs and prices.

Money in economic dissertations took the centre of the stage, along with public finance and currency-management, and in a esoteric revival of mercantilism, economics by itself assumed an altogether renewed importance at the hands of the state as a vehicle for evolving and adumbrating public policy. In other words, politics had thus announced economics on a pedestal of policy or statecraft.

While this was by and large the Keynesian significance, its relevance, according to my way of thinking, in respect of the developing economies is perhaps even greater.

The reason for such a belief is principally based on the appreciation of the hard fact of life that most of the third-world countries, working within the framework of democracy, are mostly in the midst of a peculiar or near-secular stagnation. Propensity to consume is high, even as the multitudes live behind the poverty divide.

The paradox is that even though the per capita income is low, there are enormous pulls against the propensity towards investments for creation of wealth, and workers have a tendency of not getting converted to investible surplus. Institutional frames get to become all the more rigid, and the state

develops an inherent propensity to lean heavily towards deficit financing. This normally leads the economy to mounting inflationary pressures, which eats deeply into the growth of national income.

With steady accretions in population, Malthus notwithstanding, unemployment catapults. Labour unrest increases, so do wages. But contrary to the Pigovian thesis, full employment gets to become even more Utopian and actually there is an absolute, as also percentage rise, both in disguised unemployment, under-employment and unemployment.

This, it would appear, is the general picture of an under-developed, or even a developing economy. It would also appear to represent a typical Keynesian model, a la Jan Tinbergen.

To transform this model of low productivity/under-employment/low income/high inflation into another model of higher productivity/high per capita income, price stability/fuller employment/higher national income, there is, it would appear, no other way in such developing economies but to take to well-conceived and precipitate measures to accelerate saving and investment, to promote general employment and income, and to contain inflation and stabilise prices and improve the per capita income and standard of living, all these at the behest of, and under the surveillance of the state as the programmer or the catalytic force. All these concepts are reflected in the pages of the Keynesian literature, The General Theory, and the rest.

Before I proceed further to analyse the relevance of the Keynesian concepts of economics to the third world, I may attempt a brief mention of the many-splendoured concepts themselves. It may be even better to explore this significance in respect of the individual Keynesian formulations, relating to consumption-economics, economics of saving, spending and income, economics of control, intervention and management by the state, and, finally, the statecraft for achieving the ultimate objective of full employment. While this will help us to appreciate the fundamental Keynesian ethos in public policy, it will simultaneously enable us to understand the significance of the said ethos for the developing economies.

Keynesian confrontation

Early in his formulations, even prior to The General Theory, Keynes had been gradually breaking away slowly but steadily from the shackles of the classical economics. With the panorama of his emerging thoughts fully unfurled in their splendid glory in his General Theory, and thereafter, Keynes had stood, magnificently liberated amidst the spectrum of his fresh economic concepts, rid of the broken fetters of the doctrinaire classical schools.

He gave an altogether new meaning to mercantilism, perhaps also adopted certain basic concepts from the neo-classicals and the radicals in economic thinking, waged a simmering battle of ideation with some of his contemporaries like Marshall and Pigou (the Keynesian-Pigovian confrontation particularly in respect of wages and employment itself assuming rather classical proportions). Finally, resplendent and Rembrandtesque, Keynes went about unfolding the modern theories and concepts (later called the new economics), concerning the national economic phenomena and management, on employment, interest and money, in his magnum opus and subsequent writings, deliberations and researches.

An analysis of what may be discussed as the Keynesian confrontation should be in order, not only from the outlook of an area-cut, but also in exploring the whys and hows of the Keynesian adumbrations, as relevant to booms and depressions, prosperity and stagnation, war and peace.

Keynes differed with a number of conclusions of the classical economists, in which private enterprise was the king and the price system functioning on the value mechanism and the principles of real costs provided the rule of law. His confrontation with the classicists, however, was rather wider as compared to that with the contemporaneous economic theorists.

That Keynes provided the basic fundamentals for the charismatic development of the economic philosophy of some of the later radicals like Lerner, Joan Robinson and Klein was, according to many, no mere accident. It is believed that while the Keynesian concept itself had drawn from the philosophy of some of the earlier radicals like Gesell, there was also perhaps some basic identity of mind with the earlier recognised critics of the classicists like Lauderdale and Proudhon, and may be, one would think even Hobson and Marx.

In my opinion however, these views expressed by some post-Keynesian economists, even though partially correct, have been in the nature of emphasising the obvious. For, Keynes was himself a rebel and a radical in economics and dominated the international spectrum of economic literature over the century with astonishing freshness, aplomb and finesse and, therefore, any effort in attempting at discovering areas or points of similarities with earlier economists is rather in the nature of hair-splitting and may prove to be of limited usefulness.

Adam Smith, a doyen in economics before Proudhon had considered what are known as mercantilism and physiocracy as rather out-of-tune with modern times. Keynes talked at length on mercantilism in his General Theory, and as it appears to me, was perhaps also inclined to champion the more or less mercantilist view that the state ought to provide the inducements to invest, by means of low interest rates and rational wages, and a favourable balance of trade, with devaluation and tariffs as may be necessary.

It may be concluded, as Keynes did in the General Theory. As a contribution to statecraft, which is concerned with the economic system as a whole and which is securing the optimum employment of the system's entire resources, the methods of the early pioneers of economic thinking in the sixteenth and

f practical wisdom, which the unrealistic abstraction f Ricardo first forgot and then obliterated.

No wonder that Friedrich List had discovered ertain physiocratic similarities in the Keynesian houghts like the national aggregates of saving, pending, investment, and income, the circularity of ational flows etc., because such similarities did in ct exist, and were developed as economic concepts f highly significant connotation. Incidentally, while ese similarities are rather apparent to us today, could not have been exactly so obvious at the me the Keynesian concepts were being unfurled for e first time.

As regards the opinion of some ists that ere were some vital and important points of iden- ty between the Keynesian concepts and the thoughts f socialism and (even) Marxism, there is nothing uch to be surprised.

As I said, Keynes in my opinion was himself a dical, perhaps like Prometheus. He had discovered s flaws in capitalism, and how, if not properly heckmated by the state, economic growth would ve way to economic stagnation in regular periodi- ty and how, if the strategies of the state, in matters elating to consumption, money, saving, spending, vestment, employment, production and income, at e national aggregate levels, were not pragmatic as ell as effective, the run of such stagnation would nd to be secular.

This, therefore, would lead the economy to the eaded rut of low-key equilibrium which may often me be structural or fundamental in character. And e stagnant equipoise of fundamental disequilibrium rather unique and commonplace to underdeveloped low-development economies, where barriers to conomic growth are generally rigid and multiple o wonder that, therefore, I should legitimately nd myself reaching the conclusion that the Keynesian conomics should eventually lead to an outline of e economics of the third world.

To come back to the subject at issue, however, e Keynesian battle was the bitterest with his con- mporaries, Pigou more than most.

First, he had joined issue with Marshall, his own entor, particularly in regard to the Marshallian sumptions and oversimplifications, inter alia, that l income is spent, that the aggregate of savings uals investment. Keynes also contested Marshall's ew as to how actually interest was determined and ted to equalise savings with investment.

At this stage Keynes entered into a battle royal ith Pigou, particularly in relation to the Pigovian athematical formulations and presumptions on eories of employment and wages. Knight had lent ou a reluctant hand.

The Pigovian-Keynesian confrontation, is of nsiderable interest in the context of the economics the third world. It would be adequate to briefly ntion here that Keynes considered Pigou's theory employment as a non-causative investigation into phenomenon of wages and employment. Keynes had felt that Pigou had come to certain pre-disposed conclusions regarding wages and employment, and more or less developed a theory to the orientation of the said conclusions, on the strength of a number of assumptions, many of them not validated by didactic analysis, window-dressing his theory with presumptory mathematical models and formulii. These assumptions being unrealistic and mathematisation presumptory, Pigou's theory, according to Keynes, bristled with inconsistencies and could not be used for formulation of state policies.

Amongst his contemporaries, Keynes had acknowledged his debt, by way of 'constant advice and constructive criticism', and also by way of conceptual fundamentalism, to Robertson and Kahn, as well as Joan Robinson, Hawtrey and Harrod, even though Harrod at a later stage had (I find) dissociated himself from many Keynesian formulations.

Some economists felt that Keynes had a debt to Wicksell, Cassel and Walras, and the school of thought they represented. In this view, the reference is apparently to Cassel's endeavours, in a rather anti-classical stance, to formulate a theory of general equilibrium stated in monetary coefficients, as also Wicksell's opinion that consumption and income acted and reacted with each other, and to the fact that Keynes apparently was quite at home with these views, and in his General Theory developed them to their fullest potentials.

In my view, this was rather far-fetched. Economics, like any other science, would have some kind of evolutionary process. In view of that, it is rather futile and exaggerated to trace every bit of Keynesian concept to some embryonic similarity with the tentative odd view of an earlier economist. It is more or less akin to a thesis that the greater range of Shakespearean plays were based on the stories and fables in Chaucer's Canterbury Tales Anyway, the controversy is in nature like wool gathering and is not relevant to my thesis.

Whatever that may be, I am drawn inexorably to one conclusion. While discussing heretofore Keynes' own reaction to his predecessors and contemporaries, and the conceptual controversy between Keynes and some of his compatriots, I am time and again drawn to the inevitable validity of most of the Keynesian propositions in the context of the economic problems, and the conceptual controversy between Keynes and the third world. Such a discourse at this stage, therefore, would be fully in order. (To be concluded)

TOWARDS SOCIAL REVOLUTION
a Case for Economic Democracy -
VASANT SATHE

A Serialisation 1

Some aspects of the Indian economy

Planning : Sectoral analysis agriculture

IN AGRICULTURE THE CONCEPT of individual ownership of land has prevailed over centuries It has indeed got so deeply embedded that a man's attachment to, and feeling for, the land have to be recognised even while planning for his own betterment

Land belonged under various traditional feudal systems to individuals or families and all those who worked on it were either share-croppers or labourers The owners were mostly absentee landlords who did not pay any direct attention to the production of crops on their lands

Science and technology made rapid strides in the sphere of industrial production, but their impact on farming was limited and slow In the developed industrial countries, this brought about a shift of the working forces from agriculture to industries and even then agriculture had to be adapted to new technological conditions such as mechanised farming.

In countries such as India, the population has grown at such a vast pace, particularly of the poorer sections mostly living in the rural areas, that in keeping with the Malthusian theory, although it provided the working force to the industries in the urban areas, this did not bring about any shifting of the work force and the pressure on the cultivable land, which for thousands of years was more or less constant, continued to grow The picture was that on the one hand, there were the feudal landlords holding thousands of acres of land and, on the other, smaller landholders whose lands were being fragmented among the growing numbers of their families generation after generation Thus most of the members were constantly becoming agricultural labourers because there was no land to hold on to and no industries to which they could shift

The main struggle in the field of agriculture has, therefore, been to obtain a fair distribution of land so that the maximum number of people could have a viable unit to work on This resulted in the introduction of legislative measures, such as the abolition of feudal landlordism called zamindari and, progressively, in the introduction of land ceiling laws, reducing the holdings to certain fixed ceilings and in distributing the surplus land to those who were working on them as share-croppers or labourers or ultimately to the landless labourers Even this process has been comparatively slow and has not yet been fully accomplished Yet, largely due to the tradition of bringing about a transformation through a non-violent change and because of efforts in this direction brought about by spiritual leaders such as Vinoba Bhave, this distribution has taken place without causing any organised violence or bloodshed

Historically the caste system in India having evolved round vocations, land holdings belonged mostly to the feudal classes and castes. The landless labourers or small landholders belonged mostly to what were known as the lower castes. Hence, although the reorganisation and the redistribution of lands have taken place more or less in a smooth and peaceful manner, there have been overtones of a political character between those communities which have, under the land laws, been deprived of their lands and those to whom these have been given. But in spite of this redistribution, a much larger population still remains landless and cannot be given any land

This surplus population has therefore, to be absorbed only in activities producing other goods, either of an agro-industrial character or capable of meeting other consumer needs. The best policy would be to

sector itself, lest they be forced to push themselves towards the urban pockets without getting any income there and ultimately finding themselves either in the slums or on the footpaths.

Thus, the picture in the rural areas is that of land holdings which have been comparatively cut to size, where the landlords and the peasants are putting in their best. They are using modern facilities and methods, and, subject to a favourable monsoon in the absence of irrigation facilities, if given remunerative prices for their produce and the inputs required, have proved that they can produce enough foodgrains, cereals, pulses and other crops to meet at least the basic requirements of the country.

But the harsh reality also is that most of the regions of the country are still victims of the vagaries of the monsoon and that the percentage of irrigated land has not increased substantially Although we have large rivers, the major portion of their water flows into the sea. We have also not been able to control the cost of inputs such as fertilisers, pesticides, improved quality seeds and power Nor have we been able to create any system of parity between the prices for the agricultural produce and those for the industrial produce, even in areas where industrial products are based on agricultural raw material, such as sugar, cotton and edible oils. This has resulted in a disparity in the incomes and income distribution between the people working in the agricultural sector and those working in the industrial sector Geographically also, income gets divided unequally between those living in the rural areas and those living in the urban areas

Hence, in the agricultural sphere, the problem is twofold Agriculture itself needs to be treated as an industry to which all the parameters of industrial production should be applied Of the total land available for cultivation in India, which is approximately 165 million ha, the irrigated land accounts for only 40 50 million ha, i e., about one-fourth of 25 per cent, although it must be remembered that this has nearly doubled in the last 30 years. And yet, the volume of river water which goes to the sea is 1210 million acre ft whereas the volume of water harnessed for agriculture is hardly 230 million acre ft which works out to only 20 per cent

It is well known that the major factors contributing to the growth in agricultural produce are irrigation and the availability of water, when it is most required. The fact that the percentage of irrigated land from 1951 to 1979 almost doubled has a lot to do with the doubling of the foodgrain production as well Hence, the most important tasks are to harness the river waters and to provide irrigation facilities to the remaining cultivable land which today depends entirely on the vagaries of the monsoon.

The next contributing factor is the use of fertilisers as nutrients for the growth of agricultural production. However, it must be remembered that for lands which have been under the plough for thousands of years, the use of fertilisers must ensure a proper balance between the organic and the inorganic factors so that land are maintained. Similarly, the use of pesticides and weedicides must also be in a manner that does not affect the ecological or environmental character of natural growth. Having said this, the fact remains that, as in the field of medicine, so also in the field of agriculture, we can use synthetic nutrients and chemicals to help bring about a healthier growth, not only of the land but also of the crops.

The use of fertilisers in India, or for that matter in other developing countries, has been much lower as a per unit dosage than in developed countries. For comparison purposes, if we take another developing country placed under a similar situation, such as China, it will be noticed that although the quantity of irrigated land in China is slightly more than that of India, that is, 46 million hectares as against 40.50 million ha in India, the consumption of fertilisers in China in 1980-81 has been approximately thrice that of India in the field of nitrogenous fertilisers and nearly twice in the field of phosphatic fertilisers, as Table 1 shows. Then, if we consider the fact that China has achieved a food production of approximately 300 million tonnes compared with the record achieved in India of about 132 million tonnes, we can easily appreciate the necessity for the use, both of modern methods in terms of inputs such as fertilisers, as well as of other intensive methods of cultivation

Table 1 Comparison of agricultural factors between India and China

Item	India	China
Land (million ha)		
1 Total arable land	164 93 (1978-79)	96 (1980)
2 Net irrigated land in 1950-51 .	20 85	30 0 (1952)
3 Net irrigated land in 1979-80 .	40 50	46 0 (in 1980)
Consumption of fertilisers (million metric tonnes)		
1 Nitrogenous (N_2)	3 7	12 0
2 Phosphatic (P_2O_5)	1 2	2.7
3 Potash (K)	0 6	0 5
Food production (million metric tonnes)	132 0	300 0

Source : Fertiliser Statistics 1981, Fertiliser Association of India, New Delhi.

In the field of fertilisers, which is an important agricultural input, India can justifiably take pride in the fact that the capacity of the indigenous production has grown substantially during the last 30 years. Whereas in nitrogenous fertilisers, the production capacity increased nearly 200 times from a mere 16,000 tonnes in 1951 to 3,144,000 tonnes in 1981-82, in the field of phosphatic fertilisers, it increased by about 85 times, that is, from a mere 11,000 tonnes in 1951 to 950,000 tonnes in 1981-82. The production of fertilisers is expected to go up substantially when the new gas-based fertiliser plants will be set up a few years hence and when the plants already under construction are commissioned. Even if the existing plants are worked to their full capacity, that itself would increase the availability of fertilisers substantially.

but the major means through which the productivity of land can be increased, namely, river waters, still remains to be fully harnessed. Annually, India suffers a heavy loss in a twofold manner: either there are floods in some areas due to a heavy and excessive monsoon which destroy arable lands and cause other damage, or, there is drought due to a shortfall in or a paucity of the monsoon, which causes havoc in the form of famine, resulting in the decimation of cattle and other damage. Sometimes both these calamities strike at the same time in different regions. Both could be substantially prevented and reduced if only we could harness our river waters. Engineers and scientists have been thinking for years of linking the various rivers which are spread out all over the country and which practically flow across the country, spanning its width. If a method of linking these rivers by canals were to be developed, we could have a chain of linkage that could not only help irrigate the rest of the arable land, but, in the process, also ensure the prevention of floods and droughts, besides providing the facility for the generation of hydel power and for inland navigation. It is true that this would involve a gigantic effort and would require heavy investment, but we can harness modern technology and the huge manpower resources by motivating the people in a movement or a campaign. The efforts on the scale and intensity of Bhagirath (who brought the Ganga down from heaven) could change the entire economic scene and India would be in a position to produce enough food to sustain the likely growth of population which may reach the 1000-million mark by the turn of the century, that is, in less than 17 years from now

Sometimes, one feels that nationally relevant projects such as the national river grid and the linking of rivers, in which millions of our youth could be involved, could play a great motivational role in the emotional integration of our people. Where there is a will, there is a way, and if there is a strong will, human beings can achieve the seemingly impossible. But if, in the name of pragmatism and realism, we leave all activities to bureaucratic procedures, then naturally everything has to be done by bureaucratic norms, in which costs are calculated on the basis of the routine, where more than 50 per cent is spent on the overheads and, thus, ultimately it is shown that the costs are so great that the entire project is impracticable.

It is these so-called practical people who have virtually brought about all-round stagnation, especially in respect of economic growth. They have developed vested interests, both in politics and in administration. They have brought about an imbalanced growth in the form of unaccounted black money (possessed by a very small section) and are responsible for the overall corruption of the entire political and socio-economic fibre. And surprisingly, these people get away by blaming the politicians, who themselves have succumbed to the stagnating influence and the status quo mentality of the vested interests.

If Gandhiji could achieve the impossible of rallying the unarmed poverty-stricken people of the whole country against [illegible] Mrs. Gandhi cannot do it against the Himalayan burden of the exploitation of the people for rapid and equitable growth of the nation.

The Agro-Industries

As a major portion of our population—about 75 per cent—lives in rural areas and is largely dependent on agriculture or allied occupations for a livelihood, it is essential to ascertain how we can best employ the human power in its own locale for productive purposes, which would simultaneously provide remunerative work to the unemployed or semi-employed people and also produce goods and services which the people need in order to improve their living conditions. If this twofold objective is to be achieved, then employment would have to be provided to the people without necessitating large-scale migration or transfer of population.

As we have seen earlier, the most elementary need in life is food. In terms of calories, the total foodgrain production nearly meets the elementary needs of the people and it is only in the maldistribution on account of the imbalance in the purchasing power, which, as, we have seen earlier, is not available to more than 50 per cent of our population even in terms of basic needs, that the real problem lies. Next come items such as clothing, housing and household requirements, for example, utensils, basic furniture, cattle for milk, poultry, vegetables, edible oils and fuel. Now, it is common knowledge that traditionally these items were produced in the rural areas themselves and the entire population in these areas was mostly divided according to vocations (which people carried on from generation to generation and which enabled them to develop specialisation and expertise). It is these vocations which fulfil the needs of the entire society. For example, the handloom weavers produced cloth as a family vocation. Similarly, there were people engaged in vocations such as carpentry, smithy, pottery and tanning.

But the fact remains that the goods required were mostly produced in the rural areas themselves. During the feudal period, the elites were mostly located round the capitals of the kings in the form of trading centres, but with the introduction of industrialisation, the metropolitan regions became population concentration areas where industries took over the work of producing goods on a much larger scale simultaneously, thereby depriving the practitioners of traditional vocations of their work. Those who controlled the industries had the advantages of getting cheap labour, of producing on a large scale and of underselling the traditional producers in the rural areas through aggressive

[illegible] necessary, therefore, to consider how we can achieve this situation whereby a human being becomes the centre of productive activity and is provided with work, even if that means giving him protection and differential treatment. Talking of protection, do not the big industrialists themselves want protection from outsiders and have they not been given that in the name of the growth of indigenous production? In other words, if you are an indigenous capitalist, the state must give you protection from outsiders; it must also ensure that you have the right to exploit your own people by perpetuating an industrial structure or a system which will make it impossible for a majority of human beings throughout the country to have any vocation, forcing them into abysmal poverty.

It is, therefore, felt that certain areas which deal with the basic necessities of life should be demarcated entirely for production on a self-employed basis by the people living in the rural areas. All that should be done by the state is to provide marketing facilities for the goods produced in the self-employed decentralised sector

The national marketing organisation that we shall describe in Chapter 5 would be responsible for the creation of a mechanism for ensuring the supply of raw materials, for facilitating training in different fields and for marketing the goods produced by the self-employed producers, for example, items such as clothing, edible oils, detergents, matchboxes, bidis, utensils, small tools and equipment, vegetables, eggs, poultry, piggery, footwear, umbrellas, silk cloth (and even cloth made out of synthetic fibre), ancillaries for electronic and other equipment, fruits and vegetables (preservation and canning), pickles and papads, plastic toys and vessels—in short, all goods that can be produced in a cottage industry. At present, there are two factors hindering production. These are : the non-availability of raw materials at a reasonable cost and the lack of marketing facilities for the goods produced.

Once these prerequisites have been taken care of by the national marketing organisation, there is no reason why productive activity cannot expand throughout the country, at least, in the sphere of the necessities of life. Industries in the urban centres should only be those which go in for the production of goods which essentially require an economy of scale (both for quantity and quality) and a certain amount of sophistication or which produce mostly items of comfort and luxury, or those required in areas of selective consumption such as defence and transportation. Even here, there is substantial scope for multiplication, which would provide decentralised employment. In short, the emphasis must be on use of the productive power of the least work-worthy individual. Let him produce again, even if at the initial stage they may not have the same quality as that of the goods produced by automated production. For example, if a shirt were to be produced by a self-employed [illegible] in a village, the product may not be of the same quality as that produced by a large-scale automated producer, but it could still have all the positive of a shirt. Hence, if we decide deliberately to produce the product in a decentralised manner, and a city tailor would gradually help the producer to improve the quality.

Let us next consider the vast area of traditional crafts, which, fortunately, have managed to survive despite several setbacks. These crafts have their own rich cultural and artistic value. Wood carvings, stone sculptures, hand-made carpets, delicately knit and woven fabrics—practically all the products of our craftsmen not only possess aesthetic beauty but also carry an artistic personal touch so that they become highly valuable items in an age where most things are machine-made and are of standard patterns. Hence, we should encourage these traditional crafts, and it is a matter of gratification that greater attention is being paid to this aspect in India today. It is also known that the products made by our craftsmen have established a good market in the international field, particularly in the automated, machine-made, affluent Western countries.

Thus, production, in both the organised and unorganised sectors of the country, would be harmoniously coordinated by the very structure of the organisation, namely, the national marketing organisation, through its wholesale and retail outlets which would take care of the marketing aspect while the productive sector (both in the organised and the unorganised fields) would take care of the productive aspect. This structure would be free from exploitation. This would produce a genuine surplus and because the entire productive force of the country would have been provided the capacity to produce goods and services, the growth of the national product would be much greater than that at present, when productive work is available hardly to a small percentage of the population.

In the agro-industrial sector, one very important institutional organisation that could be created is the agro-service centre which should be located at every block level and which should provide servicing facilities for the maintenance and repair of all mechanical and electrical equipment in that area such as pumps, agricultural implements (tractors, threshers), oil engines and electrical and electronic equipment (radios, television sets). Agro-service centres should also provide inputs such as fertilisers, pesticides and seeds according to the requirements of the farmers in that area. Further, these centres should provide other inputs required by the self-employed producers.

The agro-service centres can also be entrusted with local marketing centres, coordinating with other agencies. A network of these service centres would help provide employment to many technically qualified educated young men. Thus, when productive activity shall be carried out by the entire population, there would be no dearth of opportunities for young people, and it is this factor that will remove their feeling of frustration.

It is the aforementioned vocations and jobs that can provide work to the labour force, which is day by day becoming surplus on the land. Because of the introduction of mechanisation even in the field of agriculture, the number of unemployed and semi-employed labourers is increasing. Once they are gainfully employed in the vocations of the type mentioned earlier, helping them to acquire purchasing power, the burden on land would be reduced, enabling more modern and better cultivation techniques to be employed, which in turn would help greater good production. In fact, when the availability of vocations and purchasing power increases simultaneously with the availability of essential commodities such as food products, a circular effect is engendered which brings about an all round growth. It is only when the distribution of income is totally distorted, as it is today, that a situation arises where a couple of million tonnes of extra sugar produced appear to be an unmanageable surplus because it has virtually no demand in the international market, where, ultimately the sugar has to be sold at a [illegible] price. Surprisingly, the policy-makers are willing to sell the surplus sugar at a lower price in the international market rather than make it available in the domestic market for fear that this would bring down the price and thus affect profits. The [illegible] in the law of demand and supply which does not seem to have any co-relation to the necessities is most glaringly brought out by this example.

Rural Programmes

While a great deal of money is being spent on the great beneficiary-oriented programmes of rural development and welfare, such as IRDP, NREP, TDP and the various minimum needs programmes which are all included in the 20-Point Programme, it is astonishing that these programmes have not been linked with agricultural productivity on the one side and the already existing technical base of the village society on the other. In some of these programmes like the IRDP—the largest of them all—the poorest of the poor families are sought to be identified, locally sustainable economic activities are [illegible] to be selected and then the families [illegible] are placed in these activities with a subsidy for the acquiring of capital equipment relevant to the activities. It is noticed, however that the [illegible] are often imposed on the families and are not the [illegible] which these families already know as crafts. That is to say, planning in the country has never [illegible] taken care of the great expertise of village folk on lines which have sustained the village [illegible] for centuries. The village tanner, the [illegible], the [illegible], the goldsmith, the potter, the carpenter, the [illegible] worker, the weaver, the artisan, the [illegible], etc., have been nearly totally neglected. No technical upgradation of skills, no training, no subsidy, no tools, no electrical power, etc. have been provided to these skilled artisans, even though their products are often found to be in demand in cities and towns, in sophisticated society and even in export business. The present-day programmes of rural development are actually pulling out people from the activities they know and often putting them into lines they do not know so well. It is therefore necessary that the programmes correct their approach and begin to provide technical assistance to rural experts and subsidy for capital equipment in order to put these functionaries on their feet and under the range and improve the productivity of rural workers.

It is also necessary that the workers provided with work under the NREP in such moderately productive or unproductive activities like building the village community centre, sarpanch's office, etc., are given work in such agriculture-linked and highly productive work as desilting of tanks, construction of field channels, sinking of wells, levelling, bunding and [illegible] of fields and fencing of farms. This will raise productivity per man and per unit of expenditure and bring about a better and more sustained generation of income.

Today, in theory, although we want greater production, in practice because of the paucity of real demand greater production itself becomes a crime. For instance, the moment more sugarcane is produced the farmers are told that they must produce less because all the sugar produced by them cannot be sold. The same will happen to foodgrains and [illegible] to every other commodity because the market is limited and not [illegible] to the needs of the people.

[illegible] change [illegible] worthy [illegible] when adequate purchasing [illegible] and when [illegible] market the [illegible] The [illegible] of the GNP [illegible] much greater the [illegible] such [illegible] of [illegible] The [illegible] as it [illegible] production [illegible] the requirement [illegible] only them [illegible] developing [illegible] of the [illegible] considered is that [illegible] of the [illegible] population [illegible] would open up a huge market in itself for the goods produced in the developed countries. This is [illegible] whether within a country or throughout the world it is to the mutual [illegible] of all concerned to have goods produced [illegible] in view the availability of raw materials. For example, it is cheaper to manufacture wood products such as paper, furniture and ships in countries or areas where wood is available in plenty than to transport that wood to other countries to manufacture the end products there. The same rationale is true for practically all other commodities. This is how international economics must operate in the present world of shrinking dimensions. All transactions can be conducted to mutual advantage provided no one section claims the right to exploit fellow human beings and wants to justify that right by the use of force.

through modern armaments. This is what, in essence, the whole struggle for power and the crisis created by the arms race boils down to.

We shall discuss a pattern (or a model) having the in-built capacity to utilise the main productive elements in economic activity on an equal basis which would operate in a manner wherein the structure itself would ensure that (1) there is no exploitation of one section of society by another, (2) it provides the maximum incentive and scope for individual initiative in the fields of both production and distribution, (3) there should be minimum constraints in the national economic set-up and the whole system should be operated in a manner that assures a fair return to every section with [illegible] all increase in the production and thereby the surplus. This is, therefore, the concept of economic democracy which can be relevant not only to India but also to other countries all over the world. The structure suggested here would achieve the objective envisaged in the cumulative effect of circular causation by generating an in-built process, guided by the state, towards a balanced economic growth not only of the people but also of the regions. This would also undo the existing structure wherein only the centre grows at the cost of the periphery.

Education and the Development of Society

Education, which must include training in the use of modern technology, can [illegible] to the level [illegible] which the people of the less developed countries.

One of the [illegible] that has occurred in India in the field of formal education is that in making the people literate [illegible] knowledge [illegible] falling under the category of [illegible] has been [illegible] not been [illegible] Consequently [illegible] order [illegible] them and [illegible] structure [illegible] like to [illegible] do so, they [illegible] become frustrated and angry young persons.

The situation is almost the same in the case of highly specialised young persons, especially in the fields of science and engineering. Because the present productive activity is limited to a very restricted market where goods are produced more or less automatically through large-scale mechanisation and the number of technically qualified persons required is reduced.

The only solution, therefore, is to bring about a wider horizontal growth in the development of the entire population.

If care is taken to ensure a balanced interaction among the productive forces by giving them equal participative powers, the fear that all the three sectors, namely, the entrepreneur, the labour and the capital, would combine and conspire to usurp a major portion of the surplus generated may not actually exist. This is where the state, operating through the financing institutions and also being the sole custodian of the net surplus, comes in. The state, by using the surplus to bring about a balanced growth (by providing more employment and job opportunities to the unemployed people in the rural areas and underdeveloped regions) and also by encouraging the organisation of the market forces, can prevent usurpation by a few of the national surplus generated.

In a society, once the basic needs and comforts have been assured, the sense of acquisition is motivated mainly by status criteria and a desire to compete with one another to earn more wealth and to flaunt it. Moreover, money power is sought because it provides political power. If these possibilities are removed by the economic system or structure itself, thereby not allowing a few to get away with the accumulation of the surplus, the three elements of competition for status, i.e., jealousy, money power and political power, can be eliminated.

Under the proposed system, the productive forces and the financing institutions, as well as the state, would take adequate care to provide healthy competition by ensuring adequate opportunities for all persons to acquire excellence in the areas of their choice. As there would be no monopolies, there would be greater freedom of competition between people. No one would then mind if in a race between equals, the best person wins, the other always having a chance to exert and train themselves to do better in future.

Thus, under the system of economic democracy, education not only has to mean formal education, but must also include vocational or technical training. This would ensure that a person is sufficiently qualified to contribute in terms of either producing goods or rendering services. Thus, ultimately, education must enhance a person's capacity to acquire a higher purchasing power. After all, in the ultimate analysis, capital is only the accumulated purchasing power and price is only the token of value that is added to the goods or services at which those goods or services could be bought or, in short, would be in demand.

Thus, the primary task of education is to help every citizen—and particularly the new generation—to acquire knowledge and skills which would enable him or her to be a productive and creative member of society. Once this task has been accomplished, education must provide an individual access to avenues of further information and knowledge that would open out new horizons of scientific inquiry which would enable him not only to know more about the universe and the environment but also to look within himself and develop his mental faculties so as to evolve a greater degree of equilibrium and equanimity, a wide perspective and an overall capacity to acquire harmony. The human brain has tremendous possibilities of further evolution and such evolution is possible when man develops confidence and determination to help the brain in this process by constant scientific pursuit based on

inquiry and by a refusal to accept anything known as final.

In countries such as India, the common man in the rural areas has been brought up in the tradition of vocational crafts and skills acquired through generations along with a general education provided by saints and savants through the methods of recitation and learning by heart. Their teachings were conveyed through simple but entertaining audio-visual forms such as stories, dances and dramas, music and folklore, and the common people of India cannot, by any basic standards, be considered uneducated. Even though many of them may be illiterate, they not only have high ethical values but they also retain exceptional inherent artistic skills and possess a robust common sense. These people have time and again proved that they are capable of absorbing even the latest technology not only in the industrial field but also in the agricultural field.

In the political sphere, the performance of the people in terms of democracy has indeed been praiseworthy. It is not they who have failed the politicians or the political parties; if at all, it has been the other way round. In most elections, they have wholeheartedly and unhesitatingly given a clear-cut mandate by voting to power a particular party. They have seldom behaved half-heartedly. It is invariably the politicians who have failed to bring about changes and to take measures that would really improve the living conditions of the people and, in the true sense, deliver the goods. Politicians have failed because they have not been able to contain the vested interests and also because the so-called educated and learned among them have succumbed to the more convenient classical economic theories, mostly acquired from the capitalistic Western countries. Imitative capitalism has always proved tempting, and in societies where the common man has been traditionally duped by religious superstition and fatalism, the model of exploitative capitalism became a very convenient and handy tool. On the other hand, in some developing countries, the political pressure brought about by democratic urges has kept on growing, and when democratic solutions to the problems raised by these urges in the economic field did not appear possible because they were likely to hurt the vested interests, the political authority consisting of democratic forces and parties became weak and ineffective and invariably succumbed to the only remaining source of power viz., the military.

Military dictatorships are known to have the capacity to rule and control countries which are more or less homogenous. But in cases where there is greater inherent divergence, military rule has invariably led to disintegration. By their nature, military regimes are not capable of providing economic solutions to problems, and, as a result, there are constant attempts to overthrow them both internally in the form of coups and also externally in the form of popular uprisings.

Hence, we cannot blame the people for the prevailing situation by merely stating that they are not properly educated. This is only a lame excuse advanced by these people, who in spite of receiving the best education, have failed to provide solutions to the problems of the less fortunate fellow-members of society.

The main task of the organisers, the planners and the politicians as representatives of the people is to create conditions conducive to the formation of a socio-economic structure which would ensure freedom to the individuals to develop their prospects to the best of their abilities in various spheres of life according to their interests. Having created these conditions, the duty of the representatives of the people or the government is only to ensure that the rules of the game are properly followed and that no one plays foul. Thus, the government would serve as both coach and umpire. This would be true in all areas of human activity, especially socio-economic and political.

In other words, it is the duty of the state to ensure that the whole body politic develops a capacity for natural growth, the state like a physician coming in to assist the natural metabolism only when corrective measures are required.

With all the imbalance and distortion in our socio-economic life, the fact remains that there is more good in our society than evil. Because of our tradition based on a broad-minded humanatarian philosophy, which has been imbibed by our people through sages, saints and savants over thousands of years, an average person in India is noble-minded, compassionate, sociable, kind-hearted, helpful and hospitable with a catholicity of mind.

We come across such persons in our day-to-day life. By taking stock of one's life, one finds that one has had more good experiences with one's fellow human beings than bad. However, as a part of human nature, the prick of a thorn or a foreign matter in the eye or a toothache draws the entire attention of the mind even if the rest of the body is in good condition. The same is true of our social anatomy. It is the small ailments which attract the attention of the social mind represented by the media, for example, the Press, which immediately give vent to the pain by magnifying them beyond their true dimensions.

We can also see that a major source of sorrow or suffering is due to material want. The stories in our novels, books and films are replete with events wherein poverty leads to suffering due to a lack of basic necessities such as food, medicine, clothing and shelter. Simultaneously arise social problems such as exploitation, suppression, enslavement and harassment, which take on social overtones of group conflicts based on caste, community and religion. In this context, it should be noted that unemployment is one important aspect of poverty.

But even when basic needs are fulfilled, the next category of sorrow stems from competition in the social field, and, again, lack of sufficient opportunities for all. This is particularly manifest among the younger generation, which, although educated, has

(Contd. on page)

Mechanism for forest planning

R. D. Jakati

A rational forestry planning at national and state level is urgently needed for better conservation of fast depleting forest resources The data required for such plans should be collected and presented in utilisable form by Forest Survey of India by carrying out periodic nationwide forest resource inventory. To be meaningful, the working plans of forest management need to be cast in the light of priorities of national and state level plans.

THE REMOVAL OF POVERTY and attainment of self sufficiency have been and would continue o be for quite sometime the prime objectives of the ong term planning at the national level. In order hat these objectives are achieved in the shortest possile time with socio-economic and financial constraints he need for rational planning in all the sectors of conomy need not be over emphasised.

The planning in the forestry sector has so far been ad hoc. The long gestation period and the ntangible nature of the services have been eclipsing he importance of this sector till yesterday. And now when the importance of the sector is being realised, t is handicapped by the serious lack of scientifically collected reliable statistical data.

Shortcomings of working plans

Today the forests are managed and the planning, n whatever shape it is, is being done at the local evels. A document called Working Plan is prepared for the management of the forests so that a sustained yield of goods and services without deterioration of the forest is available.

However, the working plan suffers from some of the shortcomings which were not very apparent as they were not relevant in the earlier time. Firstly, it deals with management of forest in a particular tract, normally a forest division, in isolation of national needs. Secondly, the increment studies are done in respect of only the economically important species. Today practically every species has attained much importance because of the general wood shortage. These so-called miscellaneous species constitute a major portion of our stock. Thirdly, the yield regulation in many areas is done by area without much studies on growing stock over unit area. Fourthly, though the main objectives is to attain a normal growing stock and to obtain progressively increasing sustained yield specific prescriptions as to how to do it are very rarely embodied in the working plan. Fifthly, the potential productivity of the area is neither worked out nor even indicated. Sixthly, the quantitative assessment of minor forest produce in the tract is seldom done. The availability of medicinal plants, plants giving essential oils and other forest produce, excepting the very important ones in this category like bamboo and tendu patta, are rarely indicated.

Why forest planning ?

What we need is a strategic plan at national level based on reliable statistics, broken down to the state level tactical plans, which could be further divided into division or local level plans. The commitment to planning on a long term basis is commitment to data collection and, hence, importance of the role of Forest Survey of India in forest planning process in the country.

Many a time the necessity of national picture of forest resources is questioned by very senior officers both in administration and forestry sector. If we do not need any planning at national level, should we keep on importing pulp and paper despite the fact that a vast area of our country is under forests? Thus, anyone questioning the need for a national

picture of forestry resources questions the basic necessity of planning at the national level.

Under the changed conditions of the days and improved conditions of communications, the whole country behaves as one unit and concept of local level planning in isolation of national level or the regional level planning tends to be wrong. Therefore, the management of forest in isolation of national level objectives or without consideration of national frame-work of objectives is like putting a cart before a horse. The shortcomings in the national level planning in the forestry sector have been studied in great depth by J. C. Nautiyal and R. L. Choudhary in "Forest Planning Process in India" Here the authors observe that one of the very important shortcomings in the planning process is lack of reliable forest statistics. Working plans should be made in the broad general frame-work provided by national forestry planning at national and state level.

Role of forest survey

The role of Forest Survey of India is to provide the basic resource information, existing and potential, and information on demand and supply of goods and services now and in future which are so vital for any planning. The information should be collected to give a national and state level picture of forest resources.

Since most of the forest area in the country is government property, the inventory of the resources by Forest Survey of India in the first instance should consider government forests only.

Inventory of forest resources

In order to present a complete picture of how the land under forest is being utilized the following land classification is suggested. This may be neither complete nor exhaustive to meet all the requirements but is what the author feels to be workable.

Government Forest Land

Productive land	*Non-Productive land*
1 Areas with crop density 70%+	1. National parks, wildlife sanctuaries and other protected areas from which one cannot expect any produce.
2. Crop density 30,–70%	
3 Crop density 5–30%	
4 Plantable blanks (including grassy blanks, and area which could be planted etc.)	2. Areas susceptible to erosion i.e slopes more than 60°, shifting sand dunes etc
	3. Problematic area like saline-alkali lands, water logged marshy lands for which effective and practical technology has not been evolved for afforestation and regular management.
	4 Water bodies
	5 Rocky, unplantable area under cold deserts, alpine pastures, snow covered area.

The standing wood resource could be classified, as is being done now, into utility classes like ply-wood, saw-wood, pole-wood, pulp-wood, fire-wood and non-utility volume.

For carrying out the land and wood resources inventory latest aerial photographs should be used for knowing the actual area under vegetation along with ground inventory. This procedure, of course, suffers from a defect in a sense, that there is a time gap between the year of photography and the year of actually carrying out ground inventory. This defect, of course, cannot be overcome since carrying out aerial photography at the time of taking up ground inventory every time is prohibitively costly. Moreover, on forestry scale a time gap of 3-4 years would not show any significant difference. A precise imagery interpretation technology has also not been evolved to be of use in data collection And until such time any such quicker methodology is evolved ground inventory with aerial photo-interpretation alone seems to be the better method.

Assessment of demand and supply

Detailed studies should be carried out on the actual demand of wood and wood products and their supply from forest area of the country Once the future demands and supply position are indicated it would be proper to study how much of forest land is capable of producing what type of wood i.e. how much of area should be put under plantation of different species The allocation of funds to the state from the Centre and within the state to different regions should be based on these considerations.

Periodicity of data collection

There are two aspects involved in the data collection. The first one is that if the data collected is to have a high precision the time required to cover the entire country would be more, say about 15 years And under the fast changing (deteriorating) conditions of forests, by the time the data collection is over, the data collected at the beginning would become outdated Moreover, it would not be the data of a particular point of time, which could act as a bench mark for comparing the changing situations Alternatively, if the data is to be collected say within a period of 2-3 years, the task would need lot of money and trained personnel. Moreover, at lower intensity of sampling the precision would be low However, the advantage of this second alternative is that a national picture at a base year could be evolved which would be helpful in planning and monitoring and hence should be preferable.

There is another aspect of data collection which needs consideration. And that is in respect of inventory of minor forest produce and wildlife resources. Pre-investment Survey of Forest Resources organisation had an expertise in carrying out land and wood resources inventory and consumption and industrial investigation studies but did not have the expertise of preparing inventory of wildlife or minor forest produce Forest Survey of India, as an organisation today does not have the necessary technology nor the trained personnel to carry out these inventories. These will have to be acquired by training its own staff and evolving a workable methodology of carrying out these inventories.

(*Contd. on page 34*)

How biomass sustains life!

Dr. (Mrs.) S. Kumar

Biomass keeps air, water and land clean and sustains life support system Harnessing of bio-energy like biogas, biosolar fuels, producer gas and briquetted biowaste from biomass will go a long way to meet all round increasing energy needs of the people Bioenergy is designed to encourage self-reliance through efficient use of vast indigenous resources and employment of technology with minimum pollution hazard to improve ecology and quality of life

INDIA IS AN AGRICULTURAL country and the base of her economy is in her lands. The support of religion, culture and spirituality preserved social contentment and traditional ways. Society lacks the impetus to grow and expand. We are now trying to move towards development which naturally means moving away from the traditional poverty to modern affluence. It is also very important to change the ways of life. It is the younger generation which has to change the traditional ways of living, thinking and beliefs then only, there can be an improvement in the socio-economic condition of the country.

In a country like India, which has achieved food self-sufficiency to an extent, but is deficient in energy, the non-agricultural land will tend to be used for energy crops in contrast with those countries which are deficient both in energy and food and have little or no land to spare.

Source of fuel

To meet the energy crisis and the increased demands for food, fibre and feed, the only option for the country is to widen our agro-forestry base. Since agriculture is indeed a dynamic living and continuous system, the role of agro-forestry is to maintain land in a living and productive form so that human life is sustained for a very long time to come. While agricultural waste residues are a valuable feed stock for biofuels which can be utilized in a number of ways for productive purposes, it is necessary not to collect all the waste residues to enable natural soil enrichment to continue through degradation by soil micro-organisms.

Wood is the principal source of fuel in rural India, followed by oil products, animal dung, coal and others. Moreover there are certain peculiar characteristics associated with fuel wood consumption. For centuries, the poor man in this country has been freely using fire wood as a part of heritage and so long as he is poor, he will be doing so irrespective of whether or not he is aware of social costs involved.

A reliable source of energy

People at the bottom of our economic ladder might find it difficult to switch over to other costlier substitutes for fuel. As such, fuel wood will remain an indispensible source of domestic energy to millions. Most fuel wood is collected from private land or nearby forest area and transported mainly by human and animal labour. It is relatively energy inefficient and has low ratio of calorific value to weight output and hence it cannot absorb cost of large distance transportation and it finds no place in monetised economy as the majority of users collect it free of cost from forest and other woodlands.

If serious thought is given to adequate supply of energy at a reasonable cost then it comes to one reliable source that is "biomass". This is relevant indeed for all developing countries. The need to maximise production of woody biomass has, therefore, given rise to the term "Energy forestry". One of the natural assets of our country is the abundant sunshine. The total solar radiation received in India is about 60×10^{20} cal with 250-300 days of useful sun-

shine per year in most parts of the country. There is thus a vast scope of harvesting solar energy and improvement in photo-synthetic efficiency. Photosynthesis, of the photobiological process, is a continuous activity, creating organic carbon that burns with less air pollution than fossil fuels Photosynthesis helps to remove carbon dioxide from the atmosphere and generates oxygen, the life sustaining gas The wider use of biomass for development offer minimal ecological imbalance and provides means to recycle nutrients and carbon dioxide from atmosphere

Apart from the natural resource of sunshine we have a lot of waste land According to the report of the National Commission on Agriculture, Ministry of Agriculture and Irrigation, the availability of waste land amounts to about 40 million hectares in the country

The correct choice of tree and shrub species in relation to habitat is of decisive importance in every phase of silvieniture including afforestation In any trial of fuel wood plantation, wood plantation, local species should always be given first priority

The following are some of the guidelines for selection of promising species (i) The selected species should be hardy and require low in-put of water, fertilizer and plant protection measures, (ii) The species should meet variety of need e g fuel fodder, fertilizer and fibre having higher regeneration potential, and coppicing ability without loss of vigour under conditions of competition, minimum amount of bark, wood with high calorific value and ability to burn without sparks and toxic smoke, (iii) High density and short rotation will cause a heavy drain of nutrients from soil with hardly any litter fall available for recycling, therefore, selection of species with high nitrogen fixing capacity is not only desirable but rather an important criteria for selection, (iv) Agrotechnological packages of culture practices for individual species and specific habitats need to be worked out in combination with appropriate fodder legumes or grasses, (v) Standardization of tissue culture techniques for production on a mass scale is a very large demand for planting material and lastly (vi) Germ plasm collection of all the relevant species and their variants will have to be made for purpose of location specific adaptability trials also for incorporation in breeding programmes

Importance

Utilization of substandard soil for fuel wood plantation is a challenging task to every energy planner Biomass may not be the solution for all energy problems but it will, no doubt help reduce substantially our dependence on fossil fuels Biomass enables us to keep our air water and land clean and manage our life support system in a sustained manner Two things are needed first in view of our country being predominantly agricultural a perceptible tilt in favour of plants and plant sciences in our planning process by adoption of the photosynthetic model This would have social environmental and economic benefits and will help in following ways: Conservation and improvement of soil water by reduction surface run off, nutrient leaching and soil erosio and increasing soil nutrients by addition and decom position of litter fall, abatement of dust pollution Control of floods; Better micro climate by decrea in soil surface temperature and decline in evapor tion of soil moisture on account of mulching an shading; conservation of biological diversity resolv ing energy crisis in a decentralized manner, reductio of pressure on forests; employment generation, crea tion of aesthetic and pleasing landscapes, bett health, better quality of life; halting influx of rur population into urban areas and decentralizing th economy

Priority to tree and fodder planting

The only way to restore the forest cover is to tak tree and fodder planting programmes on priorit basis under the National Rural Employment Pro grammes (NREP) and recently announced Employ ment Guarantee Scheme (EGS) of the Governmer of India Meaningful results can be obtained onl if tree and fodder planting is taken up on a war footin and work started as expeditiously as possible

Now oil is fast running out biomass is regarde important among the promising alternatives, bu complete utilization of a tree to meet the require ments of sugar, natural and synthetic fibres lumbe wood chemicals and fuels, (methanol, methane etha nol, ethane, gasoline), etc has not been possible s far Plants with high energy potential can be grow in high plant densities as feedstocks, for cleaner fuel and energy The R and D on energy from biomas is at a fairly advanced stage in the developed coun tries because they have the requisite wide scientifi base, capital and manufacturing capability for its com pete utilization It may however be emphasize. that biomass can provide most of the products no obtained from oil and in time to come cellulosi materials will be increasingly utilized as feed stoc for this purpose

The domestic energy problems particularly of th rural community and the urban poor, in the develop ing countries, are indeed, very complex They ar closely linked with poverty and inequality

In the first convention and symposium '84 the motto as per the late Prime Minister Smt Indira Gandhi' message was "Ever increasing demand makes the use of bio-energy as a substitute for conventiona and non-renewable energy sources essential Unres trained exploitation of minerals for fuel can hav dangerous consequences by depleting and threaten ing fragile eco-systems"

Union Minister for Energy gave a message on thi occasion, that "energy from biomass is increasingly being recognised the world over as a very promising source of renewable energy consistent with environmental protection. Biogas, biosolar fuels, produce gas, briquetted biowaste are clean burning fuels ob tained from biomass, which can go a long way to meet the growing energy needs of the domestic, agri cultural, transport and industrial sectors With the growing of energy from biomass, there is need for

concerted effort on promotion, production, conversion, conservation and efficient utilization of bio-energy."

Need for renewable source of energy

Now the need of the country is to search for alternate, renewable, non-polluting sources of energy This should be top priority when the oil producing countries resort to frequent price-hikes.

Energy from biomass, no doubt has a very promising scope under Indian conditions because this sector encourages self-reliance through efficient use of vast indigenous resources and employment of technologies with minimum pollution hazards and can in fact improve the ecology The Govt. of India established a Commission for Additional Source of Energy (CAES) in March 1981, and the Department of Non-conventional Energy sources in 1982 to emphasise the importance in this sector

The Prime Minister's 20-point programme also emphasised the vigorous pursuit of programmes of afforestation, social and farm forestry and development of biogas and other alternative energy sources The programme aims at the promotion, production, conversion, conservation and efficient utilisation of bio-energy

Even the recommendations made by the Convention are in the direction of developing bioenergy resources These are

a There is a need for precise data base regarding the production availability and consumption of various bioenergy resources as fuel wood, agricultural waste, cowdung etc.

b R&D work should be accelerated for utilization of biomass for decentralised, portable power generation and other appropriate applications.

c The domestic chulhas should be tested for the smoke emission in addition to their thermal efficiency.

d Manufacture of charcoal through pyrolysis of cotton stalk and other agrowastes in mobile kilns and briquetting in central mechanised unit need further studies to establish their techno-economic viability

e Appropriate models should be developed for afforestation of degraded soils, considering the soil water and ecological factors.

f Research priority should be fixed for utilization of fast growing, multipurpose tree for weed energy alternatives. For this purpose, biomass research and demonstration centres under different agro-climatic conditions, should be set up □

Some aspects of Indian economy

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little or no opportunities of procuring gainful employment Such a situation gives rise to problems of social relationship and interaction between people in terms of social occasions such as marriages and parties.

The third category of unhappiness relates to the well-to-do who have no material problems. But their problems arise from a want for social recognition and competition for status Most of the persons belonging to this category are obsessed by psychological problems arising out of unfulfilled desires and ambitions or want of adequate affection or love These problems acquire various dimensions and are caused because social institutions are not able to keep pace with changing conditions brought about by the break up of joint families, constant change of work place and shifting or bifurcation of homes We also have the problems relating to the old people, who, due to the increase in longevity can live longer but are unable to stay with their offspring and are left neglected Their problems are caused by changes in the social set-up (especially in the field of culture) that is influenced by trends in the modern developed Western societies, which the well-to-do in our country try to emulate

And yet, with all these problems, there is a rich store of excellence in practically every field of life—from arts to science and from culture to sports There is excellence in literature, engineering, medicine, technology, administrative cadre and performing arts Also, some of the gifts of our traditional heritage such as yoga and spiritualism have gained world-wide acclaim

All that is now necessary is the creation of better opportunities for the productive and creative capacities of all our work-worthy people Once this is done, we will find that they can bring about a transformation in our whole socio-economic structure and can give up all petty and narrow feelings They can take pride in building a new, prosperous and united India.

In the next chapter, I propose to deal with the question of present economic disparities and distortions and suggest a solution based on participatory economic democracy so as to bring about the balanced growth of the entire nation □

How appropriate is appropriate technology?

D. K. Dixit

Many of the claims made for appropriate technology are exaggerated. In fact, it is something that does not involve huge capital outlays. Technology derives its appropriateness from correct identification of needs, the strictness with which the choice criteria are observed and the manner in which it is transferred and used.

APPROPRIATE TECHNOLOGY is a concept, a set of ideas or a framework within which to think and act for the development of a society. The aim of the concept is to provide a basis and a method for the choice of technology. It is a concept intimately connected with development whereby the development is of people rather than things, although the development of goods and services is seen to be a necessary appendage.

The all-embracing nature of the concept has led sociologists, economists, philosophers, technologists, planners and environmentalists to contribute towards its definitive descriptions. The concept leads one to discuss social issues like unemployment, population growth, rising inequality in society, urbanization, etc in a new way. It questions the dominance of the economics relating to capital and income resources, labour-to-capital, capital-to-output and output to-labour ratios, to economies of scale, to market and social prices, etc. In the sphere of technology the concept questions the indiscriminate use of mass-producing western sophisticated technology and puts new constraints on the activity of production by insisting on the use of local materials and skills for local needs and use. On a philosophical plan appropriate technology relates to the concepts of peace, non-violence and permanence and stresses dignity and the ethics of work. Within the context of planning the concept puts the emphasis on both short and long term policies that will encourage self-reliance, on bringing points of production and consumption (both in space and time) closer, and on decentralisation with respect to planning and decision-making within the regional approach.

Problems of developing nations

The four major problems of this type facing developing countries are:

- Mounting unemployment
- Rural-urban migration
- Unequal distribution of the benefits of development
- Increased vulnerability to the policies of other nations

Until the present time in history, the three major problems faced by developed societies that raised questions about the choice of technology are:

- Alienation of workers from their work, from the products of their work and from other human beings
- Environmental degradation and pollution
- Rapid depletion of resources

This classification of the different problems of developed and developing societies is, of course, general and indicative only of the primary concerns. In many cases, however, the above problems are common to both groups of countries.

Technological strategy rural uplift

In many developing countries in recent years attention has been directed towards evolving strategies with particular emphasis on rural development. The need to recommend new strategies arises from the

disenchantment with past strategies of national development, the three major components of which were

- Central planning, control and co-ordination of the economy as a top down process
- Industrialization and expansion of the modern sector as a means of rapid economic growth
- Aid from developed countries and transfer of international technology

It is now scarcely disputed that this strategy has promoted dependency culture and has led to the continued exploitation of peripheral areas by the metropolitan core, both internally and externally The strategy was largely based on the percolation theory of the distribution of the benefits of rapid economic growth The fact that over 60 per cent of the people (primarily in rural areas) still continue to live below the poverty line has led to disenchantment with this 'technocratic and 'bureaucratic strategy of development

Dimensions of rural problems

The large percentage of the population living in rural areas, the prime necessity for prosperous agriculture for self reliance in food, the decreasing land-man ratio in the wake of alarming population growth the incapacity of the modern industrial sector to augment employment and the continuously declining purchasing power of the rural poor are some of the parameters which indicate that 'solutions to basic problems of underdevelopment must be found in the country side' The debate now is between the reformist and the radical strategies of rural development The strategies differ in objective ideology used to mobilize support and in the way benefits of economic system and growth are distributed'

In defining the objectives of the two approaches in the above manner different action options emerge These options relate to the processes of

- Participatory planning
- Creation of political leadership rooted in the masses
- Land reforms
- Institution building
- Reorganization of geographic space towards achieving social equality
- Remoulding of elites and their life-styles
- Transformation of attitudes and methods in technological research
- Adaptation and dissemination calling for development of appropriate technology
- Reorganizing education so that work learning and mass-contact are considered essential to the creation of manpower that sees itself as a positive contributor to the process of development and reduction of inequality rather than as earning a passport to privilege

The radical and reformist strategies, while agreeing on the action-options, differ in the manner of implementation of the options cited above The reformists propose policy incentives and, oddly enough, even authoritarian coercion in the hope that a clear demonstration of the latter action can itself be a propellant for change The radicals see the implementation process essentially as a struggle game, because the transformation suggested by the options would hurt certain sections of society and would naturally be resisted Happily both the reformist and radical strategies recognize the importance of technological transformation What the content and the methodology of this transformation should be is really the task before the practitioners of appropriate technology

Correct identification of needs

Often the needs of the weakest sections of society are approached in technical terms in such a way that technical solutions are not always possible, or if the solutions are possible social conditions are such that the benefits of technical change will not accrue to the weakest because of lack of social control One of the tasks facing appropriate technology practitioners is to identify the needs correctly so that benefits will truly reach the neediest

What should not be overlooked of course is that technology derives its appropriateness not only from correct identification of needs and from the strictness with which the choice criteria are observed but also from the manner in which it is transferred and used When production relations change the vested interests play a dominant role As such whenever consideration to the problems of transfer and use of technology is not given well-intentioned alternative techniques either are not implemented or are misused, leading to further imbalances in the society

It is generally argued that appropriate technology is labour-intensive environmentally sound and is based on the local resource base All of this is probably true in specific instances, but many of the claims made for appropriate technology (AT) are exaggerated It is also implied that appropriate technology is necessarily that which does not involve huge capital outlays and something which is not very sophisticated in terms of scientific and technical inputs This obviously says Dr C S G Prasad 'is sheer nonsense For example the communications requirements of a sprawling nation like India would probably be best served by a satellite-based communications system That is in this case a communications satellite is 'appropriate But it costs several crores of rupees and the scientific and technical inputs are the most modern that modern science can offer' [3]

Whither self-employment scheme !

Dr. H. P. Maheshwari

While evaluating the implementation of self employment scheme for educated youth the author points out that cumbersome procedure, political interference and un-co-operative attitude of the banks' have not allowed the benefits of the scheme to percolate to the poorer sections of society or whom the scheme was meant

THE PROBLEM OF UNEMPLOYMENT of educated youth has assumed serious dimensions in India The number of educated unemployed is increasing at a faster rate in the country due to higher population growth rate on one hand and substantial expansion of technical and non-technical education opportunities on the other hand in the post independence period The growth rate in the Indian economy has been slow Blaug, Layerd and Woodhall asserts that "Supply has consistently moved ahead of demand, so that educated employment as a fraction of the stock of educated manpower has relatively been constant" The educated unemployment in India in March 1980 numbered 34 7 lakhs and 77 7 lakhs are likely to be added to this number during the Sixth Plan period (1980-85) But expected employment creation for the educated during the plan period is just 65 23 lakhs Thus the backlog of educated unemployment is expected to be 46 57 lakhs a. the end of Sixth Plan

The perusal of available data on educated unemployed reveals that compound rate of increase among graduate and postgraduates has been faster compared to matriculates The proportion of matriculates in the total educated unemployed was 78 5 per cent in 1961 and this declined to 54 5 per cent in 1979 Thus, the proportion of undergraduates and postgraduates has increased over the period Further, the percentage share of graduates and postgraduates in the labour force is just 2 7 per cent whereas their percentage share in unemployment is 9 4 per cent. Rate of unemployment is highest i e 26 97 per cent for this group of educated youth compared to any other group of educated people

Employment opportunities

The opportunity to provide employment to the educated is limited The past experience tells that rate of creating employment opportunities in the manufacturing sector and services has been low compared to growth rate in the educated work force Employment in the public sector which stood at 70 50 lakhs in 1961 increased to 154 84 lakhs in 1981 Thus our public sector has contributed on an average, employment to 4 22 lakhs annually during the above period Similarly, employment avenues in the private sector increased from 60 40 lakhs in 1961 to 73 95 lakhs in 1981

The private sector has contributed 1 18 lakhs jobs annually during the period So our public and private sector cannot absorb the whole increase in work force A considerable number will have to seek employment somewhere else and self employment ventures in agriculture, village and small scale industries, and allied activities and non-farm occupations seems to be the best possible solution for unemployed educated youth

The object of the present paper is to evaluate the implementation of self employment scheme for educated youth announced on 15th Aug '83 The study is based on primary data and information collected by the investigator from 15 branches of different public sector banks in Bulandshahr and Ghaziabad district and 309 applicants who applied for financial assistance under the scheme Financing of the scheme has been included in the priority sector and the government has raised the target for priority sector from 33 per cent to 40 per cent of the total lending within

years Under the scheme 2 to 3 lakhs educated
th are to be provided financial help annually to
aximum amount of Rs 25,000/- per individual so
they can stand on their own legs A sum of
160 crores was allocated for the scheme during
3-84

Beneficiaries

he data reveals that out of 308 applications re-
ed for financial assistance by the 15 branches of
erent public sector banks in Ghaziabad and Bulandshahr district loans were sanctioned for 62 per cent
licants Some of the applicants could not complete
nalities and their applications were not considered
the banks Loan disbursement could be made in
pect of 92 per cent of applications accepted for
ctioning of loan Some of the applicants did not
up to avail the loan The study reveals that more
n 70 per cent of the branches achieved the target
for them

Average time taken in the processing of an applion did not exceed 15 days The minimum and
ximum amount sanctioned to individuals ranged
ween Rs 5,000/- to Rs 25,000/- The study reveals
t 44 per cent of the borrowers were undergraduates,
per cent were graduates and only 5 per cent were
tgraduates Only three applicants were ITI trained
hnical hands Thus, non-technical graduates and
tergraduates were the largest beneficiary of the
eme

Utilizing the loan

The perusal of loan applications further throw light
it retail business has been the largest claimant of
bank assistance 58 per cent of the applicants, to
om the loan was disbursed applied for retail
siness of general merchandise, grocery building
terial sports goods spare parts agricultural implents, cotton cloth and ready made garments Repair
refrigerator and other electrical goods installation
printing press and oil expellers steel box manufacturing tyre retreading making of polythene bags,
work on saree and dairy and poultry are other
tivities financed under the scheme These activities
ll certainly create further employment ranging from
to 5 persons per unit depending on the nature of
rk financed under the scheme.

The survey reveals lack of inclination among the
n seekers for such work which are of a little technical nature and involve purchase of machinery and
ols They feel that starting of a retail business is
nvenient and low risk bearing activity Some of the
rrowers had past experience in running such trade
condly the amount of loan i e Rs 25,000/- is so
agre that no manufacturing unit can be opened
ven in a polythene bag stitching unit, financed under
e scheme the cost of the machinery was reported
be Rs 23,000/- The government should have made
tinction between the service and manufacturing
its at the beginning of the scheme and fixed higher
lit for the later. Alternatively, two or more youth
ould have been encouraged to start a manufacturing
it collectively

Who are the loanees ?

A cursory perusal of the list of loanees reveal that
ly influential persons or their relatives or those who
enjoyed the support of local political leaders got the
lion's share and the real aim of the scheme to help the
poor sections of society could not be achieved A
large number of borrowers included relatives and
dependents of DIC and Bank's officials and those
having political background In fact the average educated unemployed did not have proper knowledge of
the scheme and in cases where he had the knowledge,
he lacked courage and skill to follow the procedure
The greedy and the resourceful were successful in
pressurising the banks to sanction loan, avoid delay
and adopt a liberal attitude

It was also observed by the investigator during the
survey of the establishment of the borrowers that in
some cases the candidates were already running some
business and thus were not eligible for financial help,
still they were accommodated by the bankers Thus,
cumbersome procedure, political interference, uncooperative attitude of the bank and lack of awareness
about the scheme among the youth have not allowed
the benefit of the scheme to percolate to the poorer
sections of society for whom the scheme was meant
Self Employment scheme is a step in the right direction and banking system can certainly play an active
role in making the scheme a success if it is implemented in right earnest and certain modifications are
introduced.

Modifications

There should be greater liaison between the state
government and the banks if the scheme is to get
momentum It has been observed in the past that
'most state governments have not shown adequate
seriousness in promoting self employment schemes'
The state governments should help the banks in identifying viable projects and making recovery of loans.
The state governments should maintain regular contacts with banks

Technical hand should certainly get preference in
getting loans over the non-technicals But the study
reveals that technicals did not seek loan under the
scheme It will be better if the scheme is divided into
two categories namely Self Employment Scheme for
Technicals and Self Employment Scheme for Non-Technicals The loan limit for the former should be
raised

Technical and managerial training is sine quo non for
the successful running of the self employment unit
In this connection 'Entrepreneurial Development
Scheme recently introduced by State Bank of India
in Bulandshahr district in May 1984 is worth noting
Under the scheme 25 educated unemployed youth have
been selected majority of whom are technicals They
have been given intensive entrepreneurial training to
set up a unit The bank has given assurance to provide
liberal loan facility to the trainees The training programme-cum-employment opportunities scheme initiated by A P Government as early as in 1958 deserves
to be followed in other states There are now 24 production centres in eleven trades and 12 training
centres in 5 skills managed by an official organisation
known as SETWIN As a result of efforts of the State
Government, of the 20 000 small units set up in the
state, as many as 10 000 are said to be self employment units. This also comes to light that if proper
interest is taken by the State Governments, the scheme
can make tremendous progress

You and your health

Treatment for vertigo

Prof. S. K. Kacker

Vertigo is a disordered orientation of body in relation to space marked with an acute feeling of insecurity, nausea, vomiting, palpitation with sweating of body and feeling of lethargy and weakness. It is a disease most of the people experience in their life. Here the author discusses protective and preventive measures for the treatment of this disease.

VERTIGO IS DEFINED as a disordered orientation of body in relation to space In simple words, it means that a person has a feeling of movement of outside objects or his own body in relation to each other i e the chair on which he is sitting or bed on which he is lying seems to be moving or he himself has a floating sensation If you have darkness before your eyes or a feeling of heaviness in head after a sleepless night or a hangover due to drinking it is not a vertigo Most of you who have gone on a Merry-go-round or a Giant-wheel in the fairs, would have felt the ground moving when the wheel stopped and you got down from it This is a true vertigo

It is said that most of us would have experienced vertigo at sometimes or other in our life and as we grow old our chances of getting significant vertigo increase By the time we are 60 years of age, half of us would have suffered from troubling bouts of vertigo Once you get in attack of vertigo you have an acute feeling of insecurity You may have nausea, vomiting, palpitation with sweating of body and feeling of lethargy and weakness It is only those who have suffered from vertigo, realise the feeling of dread and anxiety caused by it.

Common causes

If we know about the common causes of vertigo, and investigations of a patient with vertigo with special emphasis on the precautions, exercises and cooperation required from the patient, it will help in managing the cases very effectively

Eight out of ten of the cases of vertigo in younger age group are due to the diseases of the ear Ear contains nerves for hearing and balance So in ear diseases of hearing loss and vertigo can occur In older age group the vertigo is due to the involvement of balancing mechanism in the brain and may be associated with weakness of the hands or legs or face

The vertigo due to ear-diseases is usually not dangerous to life, but if vertigo is associated with the diseases of brain it can be serious

Sometimes due to an attack of vertigo a patient may fall down but may be fully conscious If you come across such a patient on roadside or in your house, make sure that he is breathing normally and make him comfortable Do not make an attempt to make him get up, but let him lie down flat on the ground Make sure no stones or sharp objects are injuring him Loosen his collar Excessive movement of head or jerks can precipitate vertigo or make worse Most of the attacks of vertigo due to ear diseases will pass off in few minutes The attack which are due to diseases of brain may persist In either case, after waiting for about 5 minutes person may be asked to open his eyes and look in all direction If he does not feel uncomfortable, he may be asked to gently raise his head If he gets a vertigo let him lie down again On the other hand if he does not get vertigo ask him to gently sit up He may feel slightly dizzy but this will pass off in few seconds if he sits still Wait for 5 more minutes he is comfortable he can stand up Then he can be transported to the nearest available medical facilities. If it is the first attack of vertigo it is very disturbing In those persons who have had previous attacks of vertigo, the course of this complaint would be known to the person and he will not be so afraid

Once the patient is settled take him to the hospital for a check up. The doctor has to investigate him in detail with following questions in mind Does

: have a true attack of vertigo ? What is the te of the diseases ? What is the cause of the disease ? ow best the patient can be managed ? What pre- iutions and exercises can prevent vertigo in future?

Investigations

Does he have a true attack of vertigo ? This ques on can best be answered by taking a detailed istory Specifically we should establish whether the atient feels movements of his body or movement of is surrounding This may be associated with hard f hearing, ringing or buzzing noises in the ear and eling of fullness in the ear Association of nervous- ess, sweating, nausea and vomiting suggest that ie complaint is severe enough to deserve further in- estigation

The doctor will have to examine the patient to ettle site of the diseases The examination of eye iovements is very important The presence of to nd fro movement of eyeballs confirms that the atient has significant abnormality of the balancing iechanism. This movement is called nystagmus After this the hearing of the patient is examined in etail by audiometer machines It is possible to nd out the exact place of damage to the hearing iechanism i e whether it is the middle ear, inner, ar nerve connecting inner ear to brain, or brain itself, and which particular portion is diseased

Then we test the vestibular system In this test ve put warm and cold water in the ear This water timulates your balancing mechanism This creates rtifi al vertigo The reactions after this artificial timulation tell us if the mechanism is working pro- erly or not If there is no response this means the alancing organ has become weak If there is a narked hyperactive response it means it is irritable These tests tell us the site of disease causing vertigo

The comparison of hearing and balance tests gives is the exact site of damage which is causing vertigo

Cause of the disease

The site of damage may be in the inner ear or erve or brain We have to find out if it is due to lisease affecting the blood vessels, injury to inner ar tumour of inner ear infections of inner ear or liabetes etc The site of damage can be decided only y doing further tests

Those tests include X-ray of skull, X-ray of neck, X-ray of ear bone etc In case of suspected tumours CAT scanning can show as the exact extent of the nvolvement of the inner ear or brain This is im- portant to know because if tumour is so big as to press on brain, the patient wil require the help of leurosurgeons for an operation Such patients may lave associated blindnes headache, paralysis of ace or hand or leg or unconsciousness Such com- laints denote brain disease and are not seen in persons when disease is restricted to the ears only

Blood tests are done for sugar to find out if per- ion has diabetes They are also done to confirm he diagnosis How best we can manage him ?

Treatment

Once the cause is known patient can be treated In more than 80 per cent cases the treatment is by drugs to control vertigo.

In case a tumour is detected it can be operated If there is high blood pressure or diabetes, it can be controlled If the vertigo is associated with cervical spondylitis, patient may require cervical collar, neck traction or short wave diathermy In short, the ver- tigo can be controlled by drugs, and the disease is treated depending on the causative factor

Preventive measures

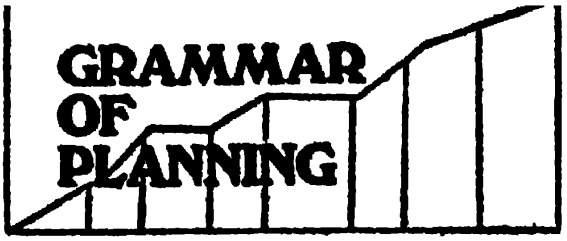
It is advisable to restrict salt intake This means that aerated drinks, fried nuts and other foods con- taining salt are to be avoided Drinking of alcohol, smoking, drinking of coffee and tea can cause wor- sening of symptoms This happens due to fluid reten- tion and constriction of blood vessels going to the brain Smoking is very harmful The drugs which are given in older age group to increase the blood supply of brain by dilating blood vessels are neutralised by smoking, as it constricts the blood vessels.

During the acute attacks of vertigo avoid driving car, scooter swimming or crossing busy roads When crossing a busy roads one has to twist the neck quickly on right or left side This may precipitate an attack of vertigo and the patient may fall down and be injured by speeding vehicles This is specially true for the elderly patients Patients are known to have been drowned in swimming pool or met with a road accident when vertig occurs suddenly The mountain climbing working near open fire, walking in a high-rise building and steep stair-cases should be avoided

The head and neck exercises can strengthen the balancing mechanism

If you take the above precautions the vertigo can be prevented, and if it occurs its side effects can be minimised □

(Based on public lectures of All India Institute of Medical Sciences, New Delhi).



A Serialisation 1

P. R. Dubhashi

Financing the pl

Physical targets and physical resources are the two components of the planning Necessary outlays have to be earmarked in order to reach the targets In this chapter, the author details the methods for raising financial resources for plan

THOUGH THE PLAN in the ultimate analysis has to be in terms of physical targets and physical resources the operating agencies have to incur financial outlay to reach physical targets and required financial resources have to be placed at their disposal for the purpose Those financial resources have to be raised by fiscal authorities

Of course it is not easy to distinguish between the plan resources and non-plan resources nor is it easy to accord precise meaning to plan outlay and non-plan outlay The non-plan outlay may on analysis be found to be as significant to the achievements of the plan as the plan outlay itself Thus, all expenditure is as crucial to the success of the plan as the expenditure on the plan schemes themselves Sometimes that is overlooked with the result that while new roads are constructed new schools opened and new dispensaries established out of the plan fund, the roads are not maintained, the schools are neglected and the dispensaries are not properly supplied with medicines in the absence of the maintenance grants for recurring expenditure thus frustrating the very purpose for which the plan expenditure was originally incurred The essential and ultimate unity of plan and non plan expenditure cannot be overlooked

The financial resources for plan have to be raised by the same means by which the state resources are generally raised i e through taxation loans and surplus income of public enterprises However with the progress of planning it is the last which is expected to be the most buoyant and dynamic The public enterprises and assets created out of plan expend are expected to yield surplus resources which c be reinvested to carry the plan forward Th possible, however if the investments are sound the enterprises are run efficiently

It is often said that in a communist country t are no taxes on citizens All that this means is the resources are raised by public authority in another manner Since all the means of production owned by the state and the distribution system is publically owned, profits of public enterprises vide the necessary resources to the state The p enterprises make profits out of the captive m where prices are fixed by the public authority prices so fixed may allow for large margin have to be tolerated by the consumers because of monopoly of the state producer In such a system planning, therefore prices may not represent the of production but the deliberate decisions of the lic authority or the planning authority to raise necessary resources

Taxes may be direct or indirect With growing comes and economic transactions both direct t like income-tax, and indirect taxes, like customs cise and sales tax may syphon off to the public chequer a good chunk of growing income in an nomy stimulated by plans However where pr enterprise has still a role to play extremely high t may prove counter productive and investment stagnate However, what constitutes the taxable c ity in a planned economy cannot be stated with degree of accuracy

It has, for example been argued that there is siderable potential of raising taxes on agricul incomes of the large, progressive farmers specially irrigated areas whose incomes have rapidly increased thanks to the Green Revolution Suggestions have been made to raise tax in the form of labour for community works

here infrastructure facilities, like irrigation, power ration and roads and communications are pro- d out of public funds, it is right to expect that the ic authorities would levy charges, such as elec- y rate, road tolls, betterment levies and water , which not only cover costs but place surpluses e disposal of the planning authorities It is but that those sections of society who derive bene- rom planning must be willing to bear their own , of contribution to continue the planning process s to benefit those who have yet to receive the s of planning Unfortunately, though strengthened ne plans, these beneficiaries use their strength to d paying their legitimate contributions Planning ities, therefore, have to make an effort to create mosphere on plan consciousness to such a degree evoke a spontaneous tendency of commitment lan effort

addition to taxation and loans, there are many l special ways of raising resources For example, insurance, if nationalised, places at the disposal of state vast resources for development programmes ourse, if the development programmes are likely s not very remunerative, the question of fair to the insurance funds invested in such programmes may arise If, however, insurance becomes universal, it can adequately support the development programme which is also universal in nature In a country Sweden, compulsory contributions to the pension or social insurance fund have placed enormous ities of resources at the disposal of the public orities In addition, small savings deposits in il banks and other banks, special savings schemes, the Unit Trust, Provident Funds, etc, can help rowing resources and make them available for the oses of planning Institutions like land develop- banks or electricity boards raise resources ugh debentures Apart from normal banking institions, cooperatives can also be encouraged to raise nds from a large number of rural people as yet vered by banking

a federal organisation where the plans are divided between the federal plans and state plans as well local plans allocation of resources as een these three categories of plans arises as a r issue Normally the constitution and legislation ides a scheme of allocation of resources However, scheme may not necessarily fit in with the financial burdens which these authorities have to bear to ort their plans Where such a divergence arises een the scheme for allocating resources and responsibilities of planning many complications may well in the process of planning Thus, in India the s are always vociferous in clamouring for larger t but not equally enthusiastic in raising commensurate resources Instead they are always eager to secure r share in grants allotted by the Centre The Indian titution allows for quinquennial finance commis- for allocation of taxes and statutory grants But discretionary grants under the constitution are at disposal of the planning authority for allocation rding to plan responsibilities of various states ever, allocation of such grants can be an occasion for acute horse trading. To eliminate this, the Indian Planning Commission has laid down a formula, known as Gadgil formula, abominable to the formula of a judicial nature adopted by the Finance Commission

Such are the demands of planning for more and more finance that all the sources suggested above may not be adequate and the plan and finance authorities are compelled to resort to deficit financing This remedy, however, is likely to prove worse than the disease triggering off inflation which is rightly regarded as the most regressive tax Deficit financing has must be considered as a sign of incompetence of fiscal and planning authorities

Inflation is not to be looked upon as an invariable concomitant of a developing economy As W Arthur Lewis suggests, growth without inflation is possible with balanced development of agriculture and industry To quote him (though) some of the better organised societies can safely finance some capital formation by the creation of money, most underdeveloped countries would be unwise to launch upon an inflationary course because they could not control it Once the tradition of monetary discipline is lost, government takes to inflation like ducks to water and financial control disappears Continuous price inflation moving domestic costs out of the line with prices can be a major source of economic stagnation'

Foreign exchange resources for planning are secured through exports promotion and import substitution Exports cannot only secure foreign exchange needed for economic development but also serve as an engine for growth For example, Venezuela has found in oil export an engine of growth which has enabled her to attain a growth rate of six per cent Failure to plan and attain a satisfactory rate of growth can constitute a brake on economic development

Control over prices is essential from the point of view of retaining export capability Rise in domestic costs can price out country's commodities from international market forcing devaluation or series of devaluations

Foreign aid or external borrowing can help the country and fill in the gap in foreign exchange resources □

New lighthouse at Kasargod

A MODERN ELECTRICALLY operated lighthouse with an effective beam intensity of one million candles has been commissioned recently at Kasargod in Kerala

The light which has been installed on a RCC tower of 30 metres height has an effective range of 17 miles in adverse weather conditions

It will serve the ships plying in the international routes from Bombay to Colombo and far East and also for the ships on the coastal shipping route from Kandla to Cochin □

BOOKS

Child Adoption

CHILD ADOPTION—A Study Of Indian Experience by H M Billimoria, Himalaya Publishing House Bombay 1984, Pages 200 Price Rs. 90 00.

THIS IS AN EXHILLRATING research study in the various aspects and ramifications of child adoption in India Mrs Billimoria, the author, does the job marvellously by giving us insights into the manifold areas that get involved

Tracing the origin of adoption the author holds the view that in the ancient world, the practice of adoption prevailed both in the East and the West It prevailed in Greece and Rome the two civilizations which have influenced deeply the Western thought and culture In her view the importance of a son has been one of the main motivations for adoption right from ancient times The present law Hindu Adoption Act of 1956 dealing with the subject was sought to be improved upon by the Adoption of Children Bill as approved by Joint Select Committee of Parliament but the Bill was withdrawn later on a new bill called the Adoption of Children Bill was introduced in Parliament in 1980 It excluded the Muslims from its coverage

The six chapters of this book tell us mostly the psychology of the parents and the adopted child The study finds out that adoption cuts across all classes and creeds the rich and the poor the educated and the illiterates the professional the top business men and the skilled and the unskilled labourers as all of them want to adopt Most of the adoptive parents are in the age group of 31—40 years and are married for 16—20 years 'It is easier for a child to be adopted in nuclear family because, the interference of a joint family was not present or not so important'

There is a notion that Indian parents are selective being very particular about the kind of children that they wish to adopt The preference for a male child can be understood if we take into consideration the fact that the main reason for adoption was for continuance of the family name inheritance of property and security in old age Only a son could provide for all these It has been found that there is a preference for a child belonging to the same religion though not of any special caste

It is true that in the process of bringing up one of the important tasks is of disciplining the child and the handling of the problems of adolescence and growing up in which conflicts could be usually present This study brings out the fact that the adoptive parents never felt the child was not theirs because it was adopted Majority of them had the same satisfaction in bringing up the child as the natural parents In their desire to be 'real parents' and take on the parental role, they have succeeded in 'washing out' the biological background information on the child Though most of them felt sorry for the mother because she had to give up child, few had much sympathy for her which is based on a greater understanding of the situation

An interesting finding is that the adopted children were particularly anxious to know why they were given up This was a threat to their self They wished to establish some identity with their natural parents and wanted to know more about them Naturally this points in the direction of skilful case work with parents and children on a continuing basis, being offered to the parents right from the start to prepare parents and help them to cope with problems if any in the process of growing up in a relatively uncharteres task of adoptive parenthood

This research study has opened vast opportunities and challenges for further investigation on many beneficial areas which an adopted child and adoptive parents should be encouraged to tell the child of his parents in earliest The study also recommends, and rightly so, that all agencies and associations concerned with adoption should make greater effort in two directions viz (a) to dispel the notion that Indian parents are selective and encourage Indian parents to adopt in large numbers and (b) concerned organisations should be organised in explaining to the people what adoption means and help in doing away with the notion that adopted child because of his/her unknown heritage has necessarily to have a bad heredity and will therefore cause trouble in later life

The author suggests that there should be more information given to the adoptive parents about what it implies as also the kinds of responsibilities that adoption involves She recommends that adoptive parents should be encouraged to tell the child of his/her adoptive status This would strengthen parent child relationship without any harmful repercussions Social welfare organisations should discourage secret adoptions which usually mean many unhappy cases if problems arise adoptive parents do not know where to turn for help They may also not get the benefit of case workers' advice on how to handle the adopted child later on It is also suggested that if children are given in infancy care should be taken not to give child if there is a history of mental deficiency in any one of the parents

This book, one can confidently say will serve useful purpose in our social set-up where adoption is still not the usual practice with childless or sonless parents

Meena Bhandari

Sharing the Prosperity

'Regional Planning in India' by Mahesh Chand and V K Puri, Allied Publisher Delhi Rs 55 pp. 541

IN A COUNTRY with a federal set up it is expected that the perceived needs of the people ought to be provided in a manner that would ensure reasonable

el of equality in distribution of the benefits of development across the federating units This however requires a concerted effort to devise suitable policies and strategies for alleviation for disparities in the various socio-economic groups and regions

As the inequalities in income and wealth have perpetuated during the plan periods, the researchers and policy makers have shown growing interest in tracing the factors that have either helped or hampered reduction in inter-state disparities This has led to emergence of a plethora of literature

The book under review is an attempt to present a thesis of the various studies on regional disparities in socio-economic development The book has been written under the U G C scheme of preparation of university level books by Indian Authors' with a view to providing reading material for graduate students The scope of the book is therefore greatly limited from the point of view of both policy recommendation and guiding research in future

The authors have however emphatically claimed at the outset "We intend to show that the lack of regional factors has made the planning process highly centralised artificial and has reduced to an exercise in sectoral allocation of investment and target fixing -nothing more nothing less Though this may be the main objective of the book, it has utterly failed to justify and demonstrate how the Indian planning process has been highly unrealistic and artificial. Such sweeping remarks do more harm than good to portray the plan achievements

The first four chapters deal with the different aspects of regional planning such as definitions of the regions units which form the basis for planning, the scope and coverage of the subject and the different techniques which are employed in regional analysis and planning An overview of the plan performance reveals that the number of people below the poverty line and the socio-economic disparities among states as measured by the different indicators of development have increased

Though population explosion is one of the major contributing factors for neutralising the effects of economic policies, the lack of effective implementation of programmes due mainly to non existence of proper planning machinery at the state level and the requisite infrastructure have added to the dimension of problem of poverty and inequality Therefore that the state governments are considerably responsible for poor performance of the state economies

The extent of differences in socio-economic levels of attainments among the different states have also been discussed The discussion is confined to works published until early seventies excluding the latest studies on the subject The assertion that the per capita income of the different states are non-comparable due largely to variations in prices is slightly exaggerated The Central Statistical Organization (CSO) has made a commendable effort in minimizing this problem by developing a comparable series of State Domestic Products (SDP) which duly makes suitable adjustments for variations in prices across the Indian states The comparable CSO data on the state incomes, of which no mention has been made, are invariably used by the Planning Commission and Finance Commission for determining the share of the states in the Central pool of resources, as this is considered to be the most reliable basis for comparing the extent of backwardness of each state Some of the inferences drawn in respect of imbalances in industrial growth are weak and inconclusive

A detailed examination of the relevant data in the book indicates that the percentage share of industrially advanced states like Maharashtra, West Bengal and Tamil Nadu, in the total number of licences issued has declined during 1976—78, as compared to 1963—67 (p 20) while the proportionate share of other states has marginally increased

Two major factors ought to be borne in mind while discussing the industrialisation of the state economies First due to the existence of a strong capital market and a network of infrastructural facilities in advanced states a large chunk of private sector investments have for obvious reasons, been attracted there Though the Central Government plays a crucial role in guiding the investment policy there is a limit to which it can intervene in the area of private investments especially when every state government is competing with each other in attracting the funds through various incentive schemes Second it can also be argued that due to low level of literacy and the lack of entrepreneurship in the backward states commercially viable projects could not be undertaken In a resource deficient country like ours regional planning in the sense of huge financial outlays in the backward states would cost heavily in terms of efficiency While equity consideration is no doubt strong diversion of resources at a massive scale is always a difficult task in a country which has federal polity as we have This is merely to point out that a simplistic analysis would hardly provide sound basis for appropriate policy decision

A very naive conclusion has seemingly been drawn in respect of credit advances by the public sector banks The amount of credits in every state is observed to be less than the total amount of deposits in each state (p 213) The data presented in the book are therefore insufficient to draw the conclusion that the public sector banks have diverted "the funds from less developed to the more advanced states" While much depends on the level of economic activities and the ability of the state economies to utilize the available funds with the bank the public sector banks have already been instructed by the RBI to advance atleast 60 per cent of the deposits in each state It is for the states to take advantage of such facilities by adopting a modern scientific outlook towards the problem of socio-economic development

Attempts are invariably being made to identify the reasonably efficient and economically viable projects (which form essential pre-requisite for allocation of resources) in the backward areas for a voluminous diversion of funds alone is not enough either for alleviating poverty or for reducing income inequalities The book has pertinently described the various

schemes and programmes launched by the Central and State Governments The Chapters dealing with the development of rural areas backward areas and tribal areas have sufficiently spelt out the individual programmes

The realization of the targets, it has been noted has suffered more due to ineffective implementation of the relevant plans This points to the fact that the lack of adequate development of human resources through education, health care and other welfare programmes has considerably impeded the realization of plan targets

There is, however, ample evidence to show that due to ad hoc distribution of funds from the Central kitty some backward states received much less per capita financial resources than advanced states, although measuring the dimension of backwardness due to inequitable distribution is very difficult The various issues of fiscal federalism which have been raised require a thorough examination in the framework of Indian federal polity as the case for devolution of resources at a higher scale (and that on the basis of backwardness alone) has proved to be inadequate and unsound

The discussion on inter-state projects like the Damodar Valley Corporation etc is of immense help in detailing the mutual benefits derived by the states which are cooperating with one another From observations and recommendations by working groups at various levels of planning it has been concluded that for a balanced regional development it would be necessary to (i) create viable economic unit by combining villages into clusters (ii) select-dynamic clusters and (iii) locate growth centres While no practical implementation of these remedies has been spelt out it has been subsequently noted that in any case development benefits are not likely to be distributed equitably over different areas and groups of people

This is good attempt to put together the widespread views on regional disparities though it does not encompass some of the other significant aspects The intra-state and inter-personal inequalities in income and wealth It should be of great assistance to both students and teachers

M M Ansari

(Continued from page 20)

The inventory of minor forest produce and wildlife resources can wait until such time the first round of inventory of land and wood resources is completed However compilation of information available on these resources could be started

Monitoring

The type of monitoring to be done is linked with the type of data collection If the data collection is done in parts spread over a period of say 15 years monitoring would also be done in parts The overall change in the forest resources of the country may not be known since different parts are covered at different times and changes in two parts would cease to be additive because of different basetime

Monitoring the changes is done through one of four general methods of continuous forest inventory And in this context it is essential that the system of continuous forest inventory to be adopted is decided at the beginning of the first round itself Because in case any system involving re-inventory of older sample plots is adopted the precise technique of relocating the sample plots on the ground after the lapse of considerable period of say 10--15 years should be evolved This is important in a country like India where rapid deforestation has been the trend

Conclusion

With the increased emphasis on the forestry sector a rational forestry planning at national and state level is urgently needed for the better conservation of fast depleting forest resources The data required for such plans should be collected and presented in suitable form by Forest Survey of India by carrying out nationwide forest resources inventory Periodic inventories would of course be necessary for monitoring the changing situation And the working plans which form the fundamental document of forest management should be cast in the light of priorities of national and state level plans to be maximized under the present day context []

Special programmes for rural development

The Drought Prone Areas Programme started in 1970-71 and the Desert Development Programme in 1977-78 are conceptually sound and the schemes adopted under these are suitable for realising the required objectives according to a report prepared by the Sub-Group on Area Development and Land Reforms constituted by the main Working Group on the Special Programmes of Rural Development for the Seventh Five Year Plan (1985 -90)

The basic objective of these two programmes is the restoration of the ecological balance of the areas covered by them through the development and management of the irrigation potential promotion of soil and moisture conservation, afforestation land stock and pasture development etc Both programmes are premised upon the idea that there should be a balance between natural resources and animal population of the area

An evaluation of the Panchmahal district in Gujarat indicates that irrigation under the programme has increased the intensity of cropping by 15 per cent The income of farmers has also gone up by 50 per cent to 70 per cent Another study shows that in the Palamau district of Bihar reservoir development schemes have caused appreciable rise in the water table This has reduced considerably the scarcity of drinking water and raised the yield of paddy and wheat by 26 per cent to 28 per cent []

THE CEMENT PRODUCTION is expected to reach 32.5 million tonnes during 1984-85 as against 18.6 million tonnes during 1980-81 recording an increase of nearly 75 per cent. The cement production was 27 million tonnes last year.

The cement industry has made commendable progress and the installed capacity during the Sixth Five Year Plan has almost doubled. From 24.3 million tonnes it is expected to go up to 44 million tonnes at the end of the Sixth Five Year Plan exceeding the target of 43 million tonnes.

The Government has encouraged the industry to set up captive power plants to meet at least 40 per cent of the power requirements. After the introduction of policy of partial decontrol the cement industry has put up substantial additional captive generation of about 150 MW both thermal and diesel leading to additional production of almost one million tonnes of cement in 1983-84. Additional capacity to generate captive power to the extent of 220 MW is in the pipeline. The captive generation capacity which is at present adequate to meet 35 per cent of the total power requirements would go up to 60 per cent.

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So wrote Abraham Lincoln to a headmaster

"HE WILL HAVE TO LEARN, I know, that all men are not just, all men are not true But teach him also that for every scoundrel there is a hero, that for every selfish politician, there is a dedicated leader Teach him that for every enemy there is a friend It will take time, I know, but teach him, if you can, that a dollar earned is of far more value than five found Teach him to learn to lose and also to enjoy winning Steer him away from envy, if you can teach him the secret of quiet laughter Let him learn early that the bullies are the easiest to lick Teach him, if you can, the wonder of books but also give him quiet time to ponder the eternal mystery of birds in the sky bees in the sun and flowers on a green hillside

In school teach him it is far more honourable to fail than to cheat Teach him to have faith in his own ideas, even if everyone tells him they are wrong Teach him to be gentle with gentle people and tough with the tough Try to give my son the strength not to follow the crowd when everyone is getting on the bandwagon Teach him to listen to all men , but teach him also to filter all he hears on a screen of truth and take only the good that comes through

"Teach him, if you can, how to laugh when he is sad Teach him there is no shame in tears. Teach him to scoff at cynics and to beware of too much sweetness Teach him to sell his brawn and brain to the highest bidders, but never to put a price tag on his heart and soul Teach him to close his ears to a howling mob and to stand and fight if he thinks he's right

"Treat him gently but do not cuddle him, because only the test of fire makes fine steel Let him have the courage to be impatient , let him have the patience to be brave Teach him always to have sublime faith in himself, because then he will always have sublime faith in mankind" □

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Taking technology to the poor

A talisman for alleviation of poverty

"I WILL give you a talisman. Recall the face of the poorest and the weakest man whom you may have seen, and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny? In other words, will it lead to swaraj for the hungry and spiritually starving millions? Then you will find your doubts and yourself melting away."

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Taking technology to the poor

P. J. Lavakare

It is unfair, says the author, to categorize the technologies in boxes based on the social strata of society since science and technology, per se, are not value specific. However, he adds, there do exist some specific socio-economic development sectors where properly chosen technologies can make a real impact on the life of the poor What exactly are these areas and how could one effectively meet the challenge? Here are the author's answers

AMELIORATION OF POVERTY through increased food production, improved productivity and employment generation has been the essential theme of our five year plans which have provided a mechanism for the economic development of our country since national independence. This plan objective presents, no doubt, very difficult and complex tasks to achieve and the Government has approached the problem through specific schemes and mechanisms in various economic and service sectors of its plan. With rapid advancement in science and technology, science has no longer remained a subject only for satisfying one's curiosity but with the emergence of new technologies, mankind has looked at these tools to see how they could be used for improving the quality of life and satisfying the necessary needs of the society at large. The Government of India, ever since independence, has always been encouraging the pursuit of science and technology and also provided necessary infrastructures through setting up of research institutions national laboratories for this purpose. Scientific technological research has also been encouraged our educational institutions

In order to express its firm commitment to pu of science and technology, the Government of I through its Scientific Policy Resolution (S adopted in March 1958, has clearly enunciated one of the aims of it's scientific policy would "to secure for the people of the country all benefits that can accrue from the acquisition application of scientific knowledge". As a resul this commitment, India has attained a very impor position in the world as far as science and techno activities are concerned; particularly, within developing countries, India is considered as a le in this field In these efforts, involving the pur tion of science and technology for development, direct use of technology forms a very impor aspect of this process since the appropriate us the various technologies available to mankind

Views expressed in this article are not necessarily those of the organisation to which the author belongs.

ks a very quick impact on the achievement of ty social objectives.

n order to highlight Government of India's oach to the use of technology, in January 1983, late Prime Minister Smt. Indira Gandhi had claimed a Technology Policy Statement (TPS) the annual session of the Indian Science Congress s at Tirupati in 1983. One of the basic objectives the technology policy is to "provide the maximum ful and satisfying employment to all strata of iety, with emphasis on the employment of women weaker sections of society". It is thus clear Government of India, through its Scientific Policy olution of 1958 and the Technology Policy State- nt of 1983 has clearly expressed its commitment the use of science and technology for the benefit the weaker sections of the society.

The conscious concern

n spite of these policy statements and various sures taken over successive five year plans, the ernment is conscious of the fact that a real impact science and technology has not yet reached the ious strata of our society in particular the weaker tions of the society have yet to benefit, in a large , through the application of science and technology s with this conscious concern that, in the Seventh e Year Plan, special efforts are envisaged to bilise the large science and technology potential, ertise and facilities in the country for accelerating pace of rural development and widening its zons. It is recognized that the real needs in the ntryside have to be carefully analyzed from the wpoint of the contribution that science and techno- y can meaningfully make It is also recognized t programmes to be undertaken for application of nce and technology will have to be done in peration with various field agencies and that kages would have to be established between the d agencies, state governments, research institutions d the various science and technology agencies ich are operating in the country, so that the rastructure created over the years are used for s purpose.

And the distortions!

However the concern for the application of science d technology gets distorted when it is viewed in lation and without the full understanding of the pe of science and technology. Science and techno- y per se, are not value specific. Science which ls with understanding natural phenomena which h generation of new knowledge does not take into stant social or economic environment of the iety. The laws governing the falling of an apple l universal and are applicable in any socio-econo- e environment. Similarly technology which olves the application of knowledge cannot be alled into social strata by branding some techno- ies as those for the rich, or for the poor, for the ss or for that think tha. There is no doubt an important aspect of choosing the right technology depending upon the use for which it is to be put. This choice depends on the requirements which have to be satisfied in a particular case. Unfortunately, by branding technologies through various labels such as 'appropriate' technology, 'rural' technology and technology for the poor, one is restricting the various choices available for satisfying the basic objectives, namely, the overall development of the weaker section of the society

In paragraphs which follow, some specific examples would be given where it will be clearly seen that a particular technology can be used for the poor as well as for the rich depending upon what the final objective is. In my opinion therefore, it is unfair to categorise the technologies in boxes based on the social strata of the society Unfortunately, this trend has even affected many programmes involving foreign aid which restricts the use of the real technologies desired by the recipient developing country on the ground that the desired technology is not 'appropriate' for satisfying the requirements of the needy poor. In fact, there are many aid programmes which require that the technologies to be supplied must be those which will satisfy the requirements of the poorest of the poor. In this process, sophisticated technologies which may be required by the country for its overall development are denied on artificial and flimsy ground Thus there are various dimensions to branding the use of technology, and for the present purpose, one should clearly stress the point that it will not be appropriate to brand the technology as the one being for poor or for rich etc. More importantly one has to analyse all the characteristics of various technologies available to see how a suitable mix of these could be utilised for the development of the poor In order to drive this point home following paragraphs will discuss some specific socio-economic development sectors where properly chosen technologies can make a very important impact on the development of our weaker sections.

Making the impact

(i) **Education** It is an accepted fact that education is one of the most important needs of any society, and in a society like ours, with a large population spread over vast rural areas, the task of providing education to the masses becomes an extremely difficult technological and managerial task The large numbers of growing potential student population pose a challenge of physically providing large numbers of schools, school teachers and other facilities which are the normal essential ingredients of providing education. Modern technology of using a satellite for directly transmitting programmes which could be received by a direct receiving TV set, can provide a very major answer to solving this problem of educating the masses. Through this technology the requirement of teachers could, to a certain extent, be reduced; no doubt at

the cost of losing personal interaction between the students and teachers. This via media approach has to be used if we are to catch up with the growing problems associated with providing the basic need of education for our masses. The satellite TV technology cannot only give means of providing basic education but it can also help in raising the awareness of the people involved in various professions, particularly farmers, artisans, village workers etc. about the modern developments in science and technology and how they could help to improve the productivity in the professions being practiced by these workers. Thus, in the area of education, adoption of technologies for merely providing cheaper blackboards, writing material, slide projectors etc cannot be considered as the most appropriate technologies for the poor but the use of Satellite TV technology, can, in this case, be considered as an essential technology required by the poor for satisfying their need for education.

(ii) **Health** : In order to provide better health for the poor there are two approaches, one is through prevention and the other through providing medicines for the cure In each of these approaches provision of basic education to a large mass of our population has to be given the first priority for which the satellite TV media, as described in the previous para, could also be an appropriate technology. Use of clean and potable drinking water has to be propagated by devising various simple techniques e g. involving carefully designed pottery provided through the efforts of the local artisans and village workers Number of simple technologies would have to be propagated in this regard However, for a large country like ours and particularly faced with the problems connected with major communicable diseases, modern techniques of producing vaccines for diseases such as malaria and leprosy would also have to be pursued using modern techniques in the field of biotechnology National efforts are being taken using both these approaches for satisfying the basic requirements of good health for the poor

(iii) **Food** : For providing the basic requirement of food, science and technology can once again claim a very important role. Firstly the preservation of food is an important aspect or improving production. The losses which take place as a result of insects and rodents, can considerably be reduced by providing appropriate technologies for drying and preserving the food grains soon after harvesting. Various national laboratories and agricultural universities are giving considerable attention to aspects relating to post harvest technology involved in food preservation after harvesting. In this area use of solar energy, through properly designed solar driers making maximum use of solar energy, forms an important technological area. Further, through various modern techniques in biological sciences such as efficient methods of nitrogen fixation, generation of high yielding varieties through proper choice of genetic strains etc. are areas of scientific and technological development through which substantial amount of increase in food production can be achieved. In this task, our farmers and agricultural scientists have to work very closely so that these modern technologies prove direct benefit to the farmers. Another area where suitable choice of technologies can make a great impact on improving food production as well as improving efficiency is the one relating to development of agricultural implements based on proper designs and choice of materials. Once again this is an area where local artisans and farmers and agricultural scientists from various laboratories and universities are making efforts to work together.

(iv) **Energy** : Energy is considered to be most important requirement or the basic need of a very large fraction of our population. Energy is required for cooking food and providing a source of power for the daily requirements such as heating, lighting etc. In a traditional rural society, and that too dispersed in a decentralised manner, it is not always possible to depend on a single technology namely that of hydro-electric or coal or nuclear energy as a single source of power New technologies are continuously being evolved to satisfy the energy requirements of the poor In this area various advances which have been made in providing energy through use of biogas plants is an ideal example. The Government of India, through its various organizations such as Khadi & Village Industries Commission, Department of Non-conventional Energy Sources, Indian Council of Agricultural Research, Council of Scientific and Industrial Research as well as a large number of voluntary organisations are playing an important role in generating appropriate designs and technologies for the use of biogas plants in various areas taking into account the local requirements and availability of local resources. Further, since firewood is an important source of energy for a large part of our population in rural areas considerable attention is also being given by many of our national laboratories and voluntary organizations to identify and propagate fast growing varieties of trees which will provide the necessary firewood for the people, and at the same time ensure a proper ecological development of our landscape. In doing so, various techniques of basic sciences have contributed to generating appropriate varieties of plants which are suitable to varying conditions of soils in different parts of country. Such technologies of generating appropriate and fast growing varieties of trees definitely form very important technologies relevant to the needs of the poor.

(v) **Shelter** : Providing housing and shelter to the poor is also a very important socio-economic development objective and science and technology can play a very important role in satisfying this basic need. Suitable technologies for providing low-cost housing using local resources and materials have been developed in various national laboratories and research institutions. There is a need for ensuring that these technologies which are generated in laboratories...

(Contd. on page 7)

The issue is to make technology work for the poor !

Kiran Karnik

One can surely take pride in our fast growing communications technology but if it comes to looking at its real impact on the poor one will have to think twice, argues the author and adds, "traditionally, communication to the masses—especially in rural areas—goes through a local leader who is, therefore, in a position to act as an information 'gate-keeper' Thus, the masses do not have access immediately to the latest information and it is ensured that some of the information (e g , on minimum wages) does not get to them at all Can new technology help them to get out of this information bondage?"

THE TECHNOLOGICAL REVOLUTION of the last four decades or so, dating from the invention the transistor in 1948, has had its largest—and probably most profound—impact in the field of communications The extremely rapid and even accelerating gress in the areas of electronics and space technoy, in particular, have resulted in massive changes in quantity, quality, time and reliability of communication The computer revolution (again, a lt of the advances in electronics) is fast developing a synergistic relationship with communications, ling to further possibilities in both fields

n India, the revolutionary developments of the last r decades have effectively been telescoped into the decade or so In fact, the last two or three years e seen an unprecedented change in the communications scene in the country The advent of operational satellite communication through INSAT has made possible—or even triggered, one might say

(i) a massive expansion of the television network, from some 20-odd TV transmitters covering about 20 per cent of the population in 1981 to over 180 transmitters covering 70 per cent of the population by the end of 1984 ,

(ii) direct reception of TV via the satellite at practically any location in the country with augmented sets ("direct reception sets"—DRS) providing 100 per cent coverage, in theory ,

(iii) the networking of all the radio stations via satellite, ensuring higher quality and reliability of service ,

(iv) the extension of telecommunication facilities, quickly and without depending on terrestrial links, to any location,

(v) the transmission via satellite of disaster warning messages to specially designed receivers located in disaster-prone areas

Meanwhile technological advances have resulted in lowering the costs of products such as VCRs colour TV sets radios, cassette players, etc. The consequent increased demand has led to mass production on even larger scales resulting in further lowering of costs. This positive cycle is continuing and costs of items such as VCRs are a fraction of what they were just a few years ago. The cost and availability of such items —especially VCRs and colour TV sets—has undergone a tremendous change in India in the last three years. Permitting import and lowering of customs duties have led to a virtual flood of imports thanks to the demand generated by live telecasts of such events as the Asiad, cricket Tests and Olympics and the increased frequency of feature film broadcasts. The expansion of TV services to new towns (almost one a day over the last few months) has ensured continuing demand.

VCRs have reached even the remotest corners of the country and villages without a single cinema theatre and often without a 'pucca' road or electricity now have "video theatres" where the latest feature films are shown to paying audiences.

But the issue is !

But what do all these changes and technological advances mean to the poor and disadvantaged in our society? Do they have any relevance at all to that half of our population that continues to live below the poverty line? Does the development and induction of new technology in communications hold out any hope for a better life for the poor?

Traditionally, communication to the masses—especially in rural areas—goes through a local leader who is, therefore in a position to act as an information 'gate-keeper." Thus the masses do not have access immediately to the latest information and it is ensured that some of the information (e.g., on minimum wages) does not get to them at all. Can new technology help them to get out of this information bondage?

The introduction of new technologies has very often resulted in increasing the gap between the privileged elite and the disadvantaged. Will the increased availability of information and communication also lead to a widening of the gap?

Issues such as these should determine the utility of the new communications technologies, in our particular context. The following paragraphs attempt to examine some of them in greater depth.

And the Potential

Information is today a key input not only for the progress of society as a whole, but for individuals too. The differential availability of information to various segments of society can lead to differential incremental gains. An earlier hypothesis postulated that new information would result in greater gains to the already better off, resulting in increasing disparities. However some studies in India have established that—*under certain conditions*—the disadvantaged gain relatively more than the privileged. Thus, in one study, the gain in knowledge was greater amongst women than men, and was the greatest in the case of illiterate women. This is obviously a finding of great importance from the point of view of promoting equity, and of helping the poor. It is therefore crucial to examine the conditions under which this happened. The key factors seem to be

(i) general availability of the information—i.e. its dissemination by broadcast

(ii) access to the broadcast

(iii) comprehensibility of the broadcast, especially the language of transmission

(iv) relevance of the message or information to the poor

These seem to be the necessary conditions though they may not be sufficient for moving toward information-equalisation.

If it is information that is a stimulant of economic progress, then it is communications that is power today. The ability to influence—if not actually control—communications is probably one of the greatest sources of political power today. Little wonder then that one of the first and most important targets in a coup nowadays is the radio or TV station. In more generalised way one might say that access to the means of communication is an important determinant of power. If therefore the disadvantaged and the poor are to have their due share of political power—in a broad sense of the term—then they must have definite and unhindered access to the media of communication or at the very least be able to significantly influence it.

In summary one might say that communication technology can definitely play an important part in helping the poor and in removing disparities if it can meet the needs outlined. What follows is a brief discussion on steps to meet these requirements and other needs of the poor.

Reaching the poor!

Full use must be made of the now extensive radio and TV networks to broadcast programmes of interest and relevance to the poor. In particular, the direct broadcast capability of INSAT should be fully exploited to reach remote rural areas.

To be relevant and effective, programmes must—generally speaking—be area, culture and language specific. This implies decentralised, local production. Low-cost equipment now available for programme production—both for radio and TV—makes possible

the setting up of a large number of production facilities Further, it facilitates recording in the field, enabling the production of participative programmes involving the audience a desirable and effective format for programmes

Since access to the programming is an obvious and essential condition towards information equalisation it is necessary to arrange for community reception facilities Community viewing, despite some very serious problems, has been proven to be viable and practical While the social problems related to it have to be tackled on a different basis, the technical problems concerning maintenance of the sets are solvable The Satellite Instruction Television Experiment (SITE) demonstrated this a decade ago by ensuring a TV set availability of over 80 per cent in over 2300 far flung and remote villages With the technology available today it should be far easier to develop and maintain appropriate TV sets for community viewing, thereby by passing the information gate-keeper

Villages without electricity supply are inevitably poorer and more information starved We must be made on the broadcast media to take information to them and to integrate them in the network Ten years ago, SITE successfully demonstrated the use of battery powered TV sets in about 150 unelectrified villages in Orissa Today technology could make this a far easier task if there is a will The capital cost of such battery powered community sets is obviously greater but them so are the benefits -in both economic and social equity terms

Massive investments are to be made in the telecommunications infrastructure in the next few years While these are by and large essential it is necessary to ensure that one does not ignore the needs of the poor and develop only a modern and efficient network of the social elite Satellite technology makes it possible to ignore distance from an urban centre for communications but and location as variables that affect cost But in theory extending communication to a remote village in a corner of the country is not more expensive than reaching a new area near a big metropolis Further new technologies make it possible to think of a nation wide messaging system a highly reliable and fast telegraph system to replace our present one in which telegrams often take days to reach many destinations Such a system could also reduce the pressure on and demand for telephones the capital cost per line of which is really prohibitive for a poor country In fact one can now conceive of a message system that operates in a oneway but near-simultaneous mode almost like a telephone but at a fraction of the cost For many uses, this may be adequate and is of special relevance to the poor in the rural areas who often need to get in touch with their relatives working in the cities or vice versa In such cases, the telephone has no meaning, because even if the caller has access to a public phone, the party at the other end does not have a telephone at home An efficient and fast telegraph system is the only answer to such a need, and will be a boon to the poor Studies have indicated that such a system is already feasible in our country and can be set up using a very small fraction of INSAT's communication capability

Another use of INSAT capabilities of special relevance to the poor is the disaster warning system This provides a warning signal to a group of villages in the event of any impending disaster e g , a cyclone on the basis of predictions made by an appropriate warning centre The technology has been developed and demonstrated, but has not yet undergone any actual operational use Its utility will obviously be the greatest for those who, for economic reasons, tend to stay on in a danger zone even after the initial general warning provided by the broadcast media and the district officials For obvious reasons, it is the poor who cannot afford to go away on the basis of a general likely to affect warning and it is therefore they who will benefit from this new disaster warning system which can provide a specific localised warning to a small number of villages even after other means of communication have broken down (There are of course, other problems connected with evacuation which are not addressed here)

Conclusion

Unlike most other technologies, new developments in the field of communications can—if properly used—help the poor rather than by-pass them Whether this actually does happen depends upon our will to do so and the innovative ways in which we can put together the various elements that the new developments provide A few definite steps are necessary and these include

(i) Using new mobile and low cost equipment for the production of relevant programmes in decentralised production facilities involving the audience and making the programmes as field based and participatory as possible

(ii) Using fully the capabilities of INSAT for radio and TV broadcasting especially the direct broadcasting capability to reach remote rural areas

(iii) Setting up community reception facilities radio and TV on a massive scale, including in unelectrified villages

(iv) Developing special almost maintenance-free sets for community viewing and making them operable from batteries Some development work to optimise the cost and performance of power sources is also required

(v) Extending the communication system to villages particularly through a satellite based telegraphy system

(vi) Perfecting and installing a disaster warning system in disaster prone areas

These few steps will not overnight transform the poor, for neither communications nor technology *per se* are magic wands that will make our problems disappear However, if we begin to move in the direction implied by these suggestions both literally and in spirit we would have embarked on a path that will benefit the disadvantaged

It is necessary to note that communication is a resource, an input into the development process In fact it can often substitute for monetary resources a fact that planners often tend to ignore It must not therefore be considered a sop for the elite of the vocal organised middle class, rather, it must be an important input in our programmes to alleviate and combat poverty With INSAT and the extensive TV network, we now have a large part of the infrastructure that can help us to change the economic and physical quality of life for the poor We have the tools that enable us to reach remote areas and the disadvantaged directly, enabling a change from trickle down policies to a frontal attack on poverty Never before has such an opportunity and capability co-existed with need What is required is a willingness to use these tools these capabilities for our real needs rather than for trivial purposes

Communications can be used to dominate and subjugate, but it can also be used to liberate The content and configuration of the communication system are both important in this respect The technological building blocks can be put together in various ways and the macro system engineering must be done in such a way that in consonance with our goals it works for the benefit of the poor

Achheja : The solar village

G. Satya Rao

THE SLEEPY VILLAGE OF ACHHEJA, 35 kilometres from Delhi, on the Grand Trunk road has earned the distinction of being one of the 15 villages in the country where an integrated scheme being implemented for utilisation of non conventional sources or to be precise, renewable sources of energy' The village was transformed into a village with modern facilities through this scheme implemented jointly by the Union Government department of non conventional energy sources and the Indian Association for the advancement of science a voluntary organisation According to Mr Visheswar Dayal Secretary of the Union Department 200 more villages are to get this benefit by March next year

The scheme laid great thrust for the utilisation of solar energy The 900 watt photo voltaic solar panels energise the 13 batteries during the day time to provide Electricity to light the 30 tube lights in the village lanes and Harijan basti According to Dr G Gururaja, Director of the project, the batteries once fully charged can supply power to these lights for 12 hour duration The lights are switched on automatically with the sun set or the brightness goes below a particular level For the time being the supply is for four hours, at the end of which they automatically go off He said domestic light may also be provided, through a Special photo voltaic panel, set up on the street light pole

The village maternity and child care centre is provided with a solar water heater system of 200 litre capacity A 65 litre capacity refrigerator is being added to the centre The community well too is fitted with a pump that works on solar energy There is a community television set also operating on this solar energy

Smokeless chulla

Over 500 out of the 700 households in the village now have smokeless chullas, designed and fabricated locally There are 27 family type biogas plants in the village A windmill provides water for irrigation of the fields, lying barren for years Very soon the village will have a 170 cubic metre biogas plant for generation of 35 KW electricity for domestic lighting a gasifier for generation of 5 KW electricity and a solar thermal power station of 50 KW capacity to help small industries

According to Mr Chaturvedi Secretary of the Association, the scheme brought about a sea change in the socio-economic life of the villagers The water supply scheme saved the villagers the drudgery and waste of time at the well Now the pump provides running water from 9.30 in the morning and people can draw water or wash clothes or animals at leisure The community television set provides both entertainment and information particularly about their agriculture The Krishi darshan programme on doordarshan encouraged the villagers to go in for sowing even though it was late and also save a crop from pests

It is no wonder when a villager described the village a self reliant one on the path to progress The village remained a dark patch in the midst of brightness all around as the neighbourhood was connected to the power grid 'We have a hearty laugh with pride when the street lights were glowing and we were hapily watching the cinema on the door darshan even though the neighbouring villages were plunged in darkness due to power break down Our power is as sure of the Sun He gives us light during the day when he is there and stores enough for the night when he retires' This was his criptic coment

Process improvements lead to Increased productivity

Why not now demystify this technology !

Bunker Roy

Good understanding of the existing conditions in rural India and psyche of its poor is the pre-requisite to achieving breakthrough in the sphere of technology transfer, argues the author and narrates, in details, all that happens when the so-called experts plan their strategies living away from the scene He examines here the UNICEF designed 3-tier system, "adopted without much thought" by all State Governments, for providing drinking water to problem villages The real answer to the problem he asserts, is his Hand Pump Mistri and not what is being tried to be sold

I WISH WE WERE a bit more balanced and open over this issue of technology transfer for the rural poor This word 'technology' has come to mean many things to many people What we associate with this word today is either irrelevant or unrelated to solving the problems of the rural poor With our extremely limited exposure to the actual real life, immediate and urgent problems of the poo if we are not pontificating on what technological options are available for the rural poor we are doing the next worst thing of thrusting it down their throats thus impoverishing him more in the process.

Technology as we know it now is modern, vague frightfully expensive, exploitative and to nearly 300 million people in this country the benefits are in direct, intangible and by and large invisible This has happened because we have had to take someone else's word for it We are told to think our technologist is better educated, more widely read, ostensibly more knowledgeable, more exposed to scientific advances so he should know what is good for the poor, what practices the poor should adopt, how and why they should keep silent and take whats coming and any voice raised against it smacks of ingratitude If and when the people should come up with a counter-idea that exposes the faults and limitations of a system thought of by so-called experts and UN-types sitting in air-conditioned offices this is not playing cricket

A sit goes in Rajasthan

The State of Rajasthan has 33,305 populated villages out of which 24,037 were identified as problem villages as far back as 1981. A problem village is defined as (1) which does not have an assured source

of drinking water within 1 6 kms or within a depth of 15 m in case of hilly region within a vertical height of 100 metres, (ii) where the source of water is susceptible to water borne diseases like cholera and guinea worms and (iii) where water has excessive salinity, iron or flourides In 1981 more than 20,000 hand pumps had been installed and more than 50 per cent were out of action for want of proper maintenance By 1984 more than 40,000 hand pumps were expected to be installed What arrangements had the Government made to repair and maintain these pumps?

What was in operation at that time was a UNICEF designed 3-tier system adopted without much thought by all State Governments in a conference in Madurai (Tamil Nadu) in 1979 What made it far easier was the fact that UNICEF agreed to provide equipment, jeeps, trucks, training materials and cover costs of training everyone from the top to the bottom The system they agreed to was as follows

This '3-tier' system:

1 Tier One A district mobile maintenance team (one team for every 500/600 hand pumps) consisting of 5 men (driver, machanic, two helpers, mason) who work under the supervision of a Junior Engineer This team is supposed to do minor and major repairs

2 Tier Two The Block level mechanic from the Public Health Engineering Department (PHED) His duty is to regularly check 50 hand pumps and carry out minor repairs above the ground If and when the hand pump assembly has to be taken out he has to summon the district maintenance unit He has no transport provided to him

3 Tier Three The village level hand pump caretaker The buck stops here He is selected by the government He works free of charge The other name for it is shramdan He is trained for 2 days He is given some spanners to keep the nuts and bolts tight He is supposed to keep the foundation clean and give some health education No more no less If anything more happens to the pump he is supposed to send a postcard

And its pitfalls!

It is immediately evident that the 3 tier system has been designed by 'experts' who have never lived and worked in a village They have to be sure never experienced what it is like to live without water for months just because the hand pump is out of order for want of a simple leather washer Since Tier Two and Tier Two is not answerable to the community because they are permanent government employees fact that pumps have remained out of order for months has not bothered them the least To add insult injury the community was told that the government owned the pump The community had no stake in hand pump and the government made it clear that the pump was government property This is reflected in the 3 Tier System where neither the Block Mechanic nor the District Maintenance team will allow the community to take their own initiative and get the pump repaired by someone in the village Why? Because the person is not trained

The HPM is born

These were some of the issues that were responsible for the birth of the Hand Pump Mistri (HPM) The idea grew out of a discussion in a village tea shop He was the district maintenance team driving past in a fancy truck donated by UNICEF and said, "Rs 1,000 for a washer in a hand pump Isn't it too stupid in words? We have way side machine shops in villages repairing tractors diesel and electric pumps bullock carts and agricultural machinery Most of them do not have degrees diplomas or are even literate and the government thinks we are incapable of changing a washer 100 ft below the ground Its just another way of wasting money" He could not have put across the point better There is a vested interest in making simple issues look complicated easy solutions look expensive and practical ideas look as if it has taken a great deal of research and field testing to think of

We realised it is too vast a problem to be left to the engineers and experts alone By far the most serious flaw in the 3 Tier System is the marginal cosmetic involvement of the community which actually uses the pump The 'experts' have come up with a caretaker who is normally an unpaid youth doing something else for a living For major repairs he responds with the district maintenance unit by a series of post cards where even the postage stamp is supposed by the Government/UNICEF because he is supposed to be so poor

And the job he did

In 1981 Tilonia trained semi-literate rural youth under TRYSEM to repair and maintain the 200 hand pumps installed for scheduled castes with assistance from the Ministry of Home Affairs After 3 months training they were placed on the field with startling results

1 They were in a position to carry out 90 per cent of the minor and major jobs on a hand pump above and below ground

2 The community was willing to pay between Rs 40—100 to get their pumps repaired and offer manual labour when needed

3 A trained mechanic or degree holder in mechanical engineering was not required

repair hand pumps A semi-literate village youth could do the same job, perform the same function as the caretaker, the block mechanic and the District Maintenance team *without leaving the village* given the proper training and the right set of tools

4 Jeeps and trucks were not necessary for repair and maintenance The same job could be done on a cycle

5 The HPM was answe able to the community He was identifiable in flesh and blood He was not a government servant and only working parttime in repairing and maintaining hand pumps For which as a professional he deserved to be paid

6 It was cheaper to maintain

Once this experiment was conducted we went to the State Government of Rajasthan with the results in the hope that they study it and possibly replicate elsewhere

To the credit of the State Government where the political will of the Chief Minister played a significant part the following decisions were taken

(a) The repair and maintenance of the hand pump will be the responsibility of the community and not the PHED

(b) A rural youth with some mechanical background will be selected by the community and sent for training for 3 months under TRYSEM After training he will be appointed as a Hand Pump Mistri (HPM)

(c) The HPM will not be a government employee He will be answerable to the community that selects him. The employment will be part time

(d) The HPM will look after 36—40 hand pumps within a radius of 5 kms from his village

(e) The State Government will pay Rs 150/hand pump per year with Rs 50/hand pump per year included for spare parts After training the HPM will get a grant of Rs 250/for tools from the Government as per TRYSEM rules For a set of special tools which he will need for below ground repairs costing Rs 2,500 he will get a subsidy (50 per cent) if he is a Scheduled Caste/Scheduled Tribe when he gets a bank loan

The vital statistics !

Till May 1984 a total of 37,151 hand pumps have been installed all over Rajasthan The State Government estimated that a total of 1,175 HPMs needed to be trained through Industrial Training Institutes and voluntary agencies like Tilonia In varying degrees of competence 886 HPMs have been trained and placed in various districts In many areas it has not been working smoothly because of poor or no understanding of the whole idea of the HPM

It does not help when we go into the background of most of the HPMs What is so extraordinary about them is that they are so ordinary The profile of 71 HPMs placed in Ajmer District for instance should give some idea how easy it is to find such people all over India

1 Occupational Status	Blacksmith (2 HPMs) Agricultural labourer (51) Cycle repair shop (7), Electrician (1) Pan Shop (1) Barber (2) Grocery shop (1) Vegetabel shop (1) Sweet shop (1), Mason (1) Farm Work (5) General labourer (10)		
2 Age Group	19—25 years	59 HPMs	
	26—30	14	
	31—35	6	
	Over 35	2	
3 Income from occupation other than repair and maintenance	Rs 50—100	30 HPMs	
	101—150	31	
	151—200	10	
	Over 200	Nil	
4 Educational Qualifications		Scheduled Caste	Scheduled Tribes
	Up to 5th Std	15	14
	6th—8th	16	19
	8th—10th	2	4
	10th plus	1	--
5 Land Holding		Scheduled Caste	Others
	Landless	9	10
	Marginal (0—5)	16	18
	Small (5—12½)	8	8
	Over 12½ bigahs	1	1

And the demystification !

The demystification that has taken place by making technology simple, accessible and understandable should be possible to convey in the following chart

Socio-economic	3 Tier System	1 Tier System
1 Cost/hand pump/year	Rs 400 - 900/h p /year	Rs 150/h p /year Rs 50 included for spare parts
2 Tools & Equipment	Trucks, jeeps, trailors h avy repair equipment cycle special tools special tools	
3 Educational Qualifications	Mechanical Technical Diploma ITIs	4th - 10th standard pass, Primary school
4 Personnel	Addl Chief Engineer, Supd Engineer Executive Engineer, Asst Engineer Block mechanics Caretakers, lower staff	HPM at the village level
5 Training	No long term training programme at any level Short term orientation courses for engineers two days for caretakers	3 months training under TRYSEM or month theoretical, 2 months practical
6 Community participation	marginal at the caretaker's level only not answerable to the community	HPM nominated by the community priority given to SCs/STs living below the poverty line
7 Community Accountability	None Answerable only to government (Tier 1& 2)	The users have the right to recall the HPM and send some one else if his work poor Sarpanch countersigns work done then only HPM can get amount from BDO
8 Community resources	None	The use of village resources knowledge and skill are total
9 Institutional Finance	No provision Tools are given free to caretakers	HPM takes a loan from nearest bank for special tools worth Rs 2500 50% subsidy for SC/ST

And the problems !

1 The One Tier System is not without problems By far the biggest threat to the idea not working on the ground is the breed we call the Educated Man In spite of all the work that has been done the international experts in UNICEF call it an 'experiment' The 3 Tier System has by and large failed and they are looking for alternatives but these people have not got intelligence nor grace enough to accept the 1 Tier System—because they themselves could not think of it The 1 Tier System has been adopted all over the State but UNICEF in public statements have said it is still 'unproven' I have written a number of articles on the One Tier System in their eyes it is premature Because it sounds too good to be true in its simplicity and effectiveness I am accused of misrepresentation and distortion of facts These experts cut a sorry figure

2 Funds for maintenance that should have been transferred from the PHED to the Development Department is taking time Many BDOs do not know what the money is for and how it is to be paid to the HPMs

3 The training institutions need support Vehicles to take the trainees out to damaged hand pumps which are presently lying with the PHED

4 The selection of HPMs have been faulty in many cases Instead of one HPM per 5 km radius many DRDAs have sent 5 trainees per village for TRYSEM training This makes the appointment of the HPM very difficult

5 Bank managers are reluctant to give loans for special tools because they think the HPMs will not pay back If they look after their hand pumps properly there is no reason why the amount cannot be paid back

6 There is confusion over the right type of tool Project Officers DRDAs turn to the local PHED engineer for guidance on the type of tools to be bought and because HPMs are looked on as caretakers many areas the wrong set of tools are given Naturally they cannot carry out the major and minor repairs so the feedback is 'See we told you They are just not competent enough to repair a hand pump'

7 The sarpanches in many villages are not prepared to take the responsibility of monitoring HPMs They have to countersign that the pumps are in working order and with that receipt the HPM gets the money from the BDO In many cases sarpanches are not prepared to get their hand pumps repaired by scheduled caste HPMs.

These are all problems that could be sorted out time None is very serious. For once the community has responded spontaneously and even the DOs are quite excited over the idea of the HPM It ives the major problems we are all grappling ith

(a) technology transfer ,

(b) community participation in this case is total,

(c) community accountability is assured ,

(d) village knowledge and village skills are being used ,

(e) employment in the rural areas is being generated ,

(f) village based institutions (panchayats, banks) are being used, government schemes are being used (TRYSEM, SC ST subsidies) to the fullest extent ;

(g) it is a system which is totally dependent on the HPM and not inter-dependent like the 3 tier system where one cannot do without the other This promotes self reliance

And why this prejudice ?

The tragedy with too many experts spending too uch time on a simple problem is that they can ever come to a decision acceptable to all This has appened with the one tier system The people who e the pump want it its the best most acceptable d definitely by far the most effective system because is located closest to the village The only trouble our high powered experts do not want the system work It has damaged their pride, it has exposed eir limitations and they are desperately looking for way of saving face The top engineers are all for but the middle and low rung within the Department ok on this process of demystification as a distinct reat UNICEF's narrow vision does not help

Now different versions are coming out two-tier stems, three and a half tier systems so long as it not the one tier because that identifies it with Tilonia nd the State Government of Rajasthan The Ministry f Works and Housing have not even acknowledged in their Working Group Paper on the 7th Plan Just ows the lobby that is at work (or is it lack of nderstanding ?) not to allow the demystification to ke place on a large scale But that I am afraid is e only answer if we want technology to reach the oor □

Nuclear Power Board Constituted

THE DEPARTMENT OF Atomic Energy has constituted a Nuclear Power Board (NPB) recently The oard has superseded the erstwhile Power Projects ngineering Division (PPED) NPB is headed by a hairman Besides Chairman, NPB consists of eight embers from within Department of Atomic Energy nd other Government organisations

The functions of the Board are

(i) Design, engineering construction and operation of nuclear power stations,

(ii) Testing and development of systems, equipment and component required for nuclear power generation

(iii) Generation and supply of electricity including arrangements for its transmission ,

(iv) Recruitment, training and management of personnel and

(v) All other activities connected with the efficient operation of nuclear power stations

The Board will also ensure functional co-ordination between its programmes and the activities of Bhawa Atomic Research Centre and other research centres under DAE It will identify R & D inputs required for the programme and fund research and development in these areas to be undertaken by BARC and other research centres

The formation of NPB is to be understood in the context of the long term power profile, recently prepared by the Department of Atomic Energy, which envisages an installed nuclear generation capacity of 10 000 MWe by the turn of this century The prime thrust of the activities of the Nuclear Power Board would be directed towards accelerated pace of implementation of Nuclear Power Programme □

CART for rural development

The Council for Advancement of Rural Technology (CART) set up under the aegis of the Ministry of Rural Development, Government of India acts as

1 The national nodal point of co-ordination of all efforts at development and dissemination of technology for rural areas

2 A catalyst for development of technology, appropriate for the rural areas, by identifying and funding research and development efforts by different organisations , and

3 As a clearing house of information and a data bank, it also strengthens existing institutions of research and develops or sets up institutions so that national-level institutions on matters of rural interest are built up

The projects geared to study or promotion of integration or interaction of social sciences with rural technology would qualify for financial assistance by CART The projects may be sponsored by Government departments, autonomous organisations cooperative institutions or voluntary agencies

The Secretary, Department of Science and Technology, Government of India, is the Chairman of the 14-member panel of scientists of CART to consider proposals of projects □

This technology and this scenario !

Dr G N Seetharam

In this existing development model, argues the author, it's no use 'playing with a cocktail of technologies' for alleviating human misery. Let's not be Utopian, he says and adds fundamental shifts in the nature of technological choices cannot take place without a fundamental realignment of the social and political force configuration in this country. Here, in this piece he says, the objectives are (i) to examine the role and place of technology within a certain model of development (ii) to examine the implications of technological alternatives for welfare, and (iii) speculate on the possible future framework.

TECHNOLOGY—WHAT IT MEANS ? By technology we mean the application of Science into the process of production. In other words it is the relationship between inputs and outputs. For most of human history technology in spite of occasional revolutionary leaps was static. It is only after the advent of the industrial revolution that technology has become a dynamic transforming force. After the second World War the impact of technology on human life and the production process has become much greater. There has been an organic coalescence between science and technology leading to the worldwide phenomena of the scientific technological revolution. Between the laboratory and the factory or the farm the time taken for transfer of technology is very short. We are now practically living in a revolutionary age i.e. the technotronic age. The 'future shock' of Alvin Toffler is coming true. Communications are expanding and intensifying. There has been a dialectical leap in the growth of technology in other words the technological revolution is becoming a permanent revolution. We are to a certain extent the children of our age and in substantial measure technology is determining our consciousness.

This development model

However important it may be technology represents one segment of the dimensions of progress. Technology exists and thrives in a certain social framework and the human welfare implications of technology are determined substantially if not in full measure, by the framework. Technology represents the productive forces whereas the production relations are determined by the social framework. There is a dialectical interaction between the productive forces and productive relations leading to progress albeit by zig zags. Of course there may come revolutionary leaps in technology which may question the very *raison d'etre* of a basically evolutionary framework leading to historical rupture of the framework itself. But generally technological determinism is not the rule though neither is technological nihilism. So let us give the broad contours of the Indian model of development so that an understanding of the backdrop for technological change is achieved.

The "Indian model of development" is unique in the entire third world. It rests on a pluralistic political foundation with various social classes and stra

making their impact felt through universal franchise The economy is guided by the "mixed economy" model where a strong public sector controlling the commanding heights co-exists with one of the strongest private sectors in the third world Of course there is evidence that the fundamental laws of motion of society are based on private property and hence the laws of the market place and capitalist development make themselves felt During the 37 years or so of independent development India has grown at a "hindu" rate of growth of about 3 5 per cent per annum But yet between 2,5ths to half the population lives in conditions of absolute poverty Still there is no large scale questioning of the formational model Through the tactic of social compromise and reform the Indian elite has by and large defused social tensions This is undoubtedly what it can be proud of

And let's face it !

Now it is known that human welfare in terms of a set of social indicators or income distribution pattern is to a large extent dependent on the model and dynamics of a certain model of development rather than by mere technological forces For example in China, Cuba and other countries basic human needs seem to be met though the absolute level of technology is low On the other hand in advanced countries like the U S in spite of very high technological levels there are people, albeit a small fringe minority living in poverty So human welfare seem to be to a certain extent independent of technological dynamics Of course, it has to be kept in mind that the political choices available even to the poor in the American society are not available to the people in communist countries

One of the jokes which makes rounds in Moscow runs thus an old man walked up to the President of the Soviet Union showed him a pumpkin and said, 'Sir kindly select a pumpkin The President replied You fool how can I select a pumpkin when all you are offering is one pumpkin The old man a rustic peasant responded—But Comrade don t I elect you even though you are the only candidate in the elections

So if on the whole human welfare measured in purely economic terms seems to be independent of technology in substantial measure then what is the human condition dependent on ? The answer obviously lies in the social system Now in India we have a society which is developing on a capitalist path which by its dynamics perpetuates and reproduces in expanded form inequality and poverty The rich and the middle classes get better off whereas the poor either sink to lower depths or are left untouched Of course, there are anti-poverty programmes but they do not tackle the roots the problem and are merely treating the symptom

Now that being the nature of the model of development can be hope by playing with a cocktail of technologies to alleviate human misery in this country ? In my view this view is utopian Fundamental shifts in the nature of technological choices cannot take place without a fundamental realignment of the social and political force configuration in this country Peripheral changes in the choice of techniques will have peripheral changes in the standard and mode of living In other words, technological choice *is not a key determinant* to poverty eradication Poverty eradication is a question of political economy, a question of political will to bring about a qualitative shift in the model of development The model of development as in India to-day is not conducive to a revolutionary sweep of poverty But even within the framework alternative approaches are possible

The alternatives, their impact !

By the end of the 70s hectic discussions and seminars were held in India and abroad on the priorities of development The Nehru Mahalanobis model or the Indian strategy of development came under fire since it was not in a position to solve the basic economic questions which stood before the Indian people Poverty grew and unemployment was not liquidated All this led to a strengthening of the influence of a school of intellectuals who searched for a solution to the economic problems of India outside the Nehru-Mahalanobis strategy These discussions and debates got a strong push during the Janata party regime Undoubtedly, the debate will have an international implication and is likely to influence thinking on the subject

This debate was not confined to India s boundaries In fact the entire developing world were engulfed in the debate The various U N Organisations and also the World Bank took a keen interest in the debate This facilitates us to make an inference that probably the debate reflected the developmental processes of the third world countries for the past 15—20 years and they almost simultaneously came to the state of development which was not very dis-similar to the stage of development which India was in The questions which are debated are significant from the point of view of economic history Other large countries like USSR USA, France and England had international situations and also independence on their socio-economic systems The correctness of the answer which the Indian bourgeois gave 25 years ago was put under doubt during the course of the discussion Here we shall critically analyse the main a guments of the various parties Naturally, the discussion was general, strategic and engulfed the direction of the development of the country in general

A closer look . . !

The Nehru-Mahalanobis model was prepared under the influence of the feldman model which was worked out in the Gosplan in the 1920s The essence of the model was an hypothesis, the priority investments in heavy industry was pre condition for high growth rates in the long term This analysis was based on the

Marxian theory of reproduction The fundamental position of the author was that ceteris paribus the potential growth rate would be higher in correspondence with the investment in the creation of capacities in heavy industry In the 50s and 60s bourgeois economic literature was dominated by an axiom that with a sufficient growth in production the problems of distribution will be automatically solved Affluence of a few was seen as a *sine qua non* for savings which after being translated into investments must result in growth or as Mahbubul Haq put it in 1963 the road to eventual equality possibly lies through initial inequalities"

At the end of the 60s and the beginning of the 70s it became obvious that a large part of the population in developing countries of a capitalist orientation did not gain from such a strategy of development At the beginning of the 70s almost a billion people were living under conditions of absolute poverty Having this in view at the beginning of the 70s new approaches were made to economic developing underlying 'Grassroot growth' Participation" and Employment orientation' Also the basic need strategy The appearance of these approaches is considerably facilitated by the fact that the more far seeking scholars understood that in the absence of reform class struggle would have been intensified The summit session of the non-aligned countries accepted a resolution appealing to "liquidate unemployment and poverty" through the realisation of political reforms and 'satisfaction of basic needs '

This basic needs strategy !

The basic needs strategy was proposed by the International organisation of labour at the Conference on employment (1976) This approach was also supported by the International Bank for Re-construction and Development, and also the Organisation of Economic Co-operation and Development This strategy emphasises that satisfaction of basic needs as a final aim of development and creation of employment as a means for the satisfaction of basic needs So the accent was on finding a solution to the problems of absolute poverty through increase in employment According to this strategy the purpose of the plan was to be indicated in such directions as health, education etc which has immediate implications for human life In other words, the criteria of investment in this approach is the improvement of the quality of life

The strategy underlines the consumption of goods and services necessary for the satisfaction of basic needs Edwin Martin, the Chairman of the IBRD—Committee on the Question of Gain Production in Developing Countries put the question thus 'Increase in incomes of the poor is necessary Programmes of redistribution are promising in these countries but the emphasis is on using labour incentive technology in all economic sectors Having in view the labour surplus a higher growth of the gross national Product would firstly help those who are suffering most from starvation" The World conference on employment declared as a fundamental principle "strategies and plans of national development must include as an important objective increase in employment and satisfaction of basic needs of the population" Also, a group of 20 econonists headed by Jan—Tinbergen in its report to the 'club of Rome' appealed for global conciliation between the rich i e, developed capitalist countries and the poor i e, third World countries, for achieving the following objectives by the end of the century

(i) Continuity of life 65 years or more,

(ii) Literacy 75 per cent as a minimum, and

(iii) Coefficient of birth less than 25|1000

This group considers that for achieving the above objectives there is need for 'aid' to the extent of 15-20 billion dollars annually for developing countries in the west and Japan Also, it was underlined that the objective of economic development was not in growth of GNP but in the growth of human welfare This, in my opinion is quite a correct assessment, it being testified by the experience of Kerala where the left democratic government was in power for a long time

A pessimistic scenario !

Unless we adopt a new strategy aimed at strengthening and reorienting the Public Sector with emphasis on labour intensive and frontier areas as also develop technologies for dry land farming and the informal sector in addition to skill development in the Cottage industries the scenario at the moment is weak According to present estimates about 500 million people will be under the poverty line by the end of the century

There are only two ways of ending poverty—(i) a revolutionary qualitative shift in the mode of production which may end a pluralistic society and (ii) an evolutionary but qualitative shift in the mode of development by making it more responsive to the needs of the poor To a certain extent catering to the needs of the poor is in the interests of the preservation of the system itself Even such a shift will require a shift of the technological focus to cottage industries dry land agriculture etc A total return to labour intensive methods is neither possible and is anyway utopian The need of the hour is a cocktail of technologies which will maximise employment and minimise poverty without fully sacrificing the objective of growth The public sector could become the locomotive in such a reorientation of strategy But, within the present contours it is difficult to foresee such a change The alternative is one of secular stagnation of the needs of the poor The scenario is not optimistic

Technology now must form part of IRDP

I Balakrishnan

Ending the existing dualism, rather quickly, in the rural sector—a small segment being forward looking ever ready to assimilate new ideas, and all the rest traditional and static—should be our prime business today, says the author. We can do it, he adds through a well-planned action programme designed to take science and technology nearer the rural poor. Let's, he argues, then make technology an integral part of our Integrated Rural Development Programme.

INTEGRATED RURAL DEVELOPMENT has come to stay as one of the major planks of our development process and effort. With the modest beginning made through the inauguration of Community Development Projects early in the First Plan period—modest only in the sense of spatial coverage and financial outlay—the groundswell of enthusiasm and intensity of commitment with which the projects were launched was almost un-precedented. The idea has taken root, blossomed, and spread steadily with an increased and increasing scope of action.

The Programme in its present form initiated in 1978-79 in 2300 development blocks in areas covered by some special programmes has been extended from 2 October 1980 to all the blocks in the country and is a part of nation-wide 20-point programme.

The gains and the lacunae!

Statistic relating to Integrated Rural Development Programme are, indeed impressive.

The VI Plan budgetary allocation shared equally by the Centre and the States, is Rs 1500 crores added to this investment is the institutional credit mobilised to the tune of Rs 3000 crores.

In physical terms the Programme aims at providing productive assets to 15 million identified families below the poverty line during the current Plan period.

Per-capita investment under IRDP taking all-India figures increased from Rs 1642 in 1981-82 to Rs 3201 in 1983-84.

Achievements of the physical and financial targets in the first four years of the Plan period were impressive, giving encouragement and impetus to a much larger outlay and coverage during the VII Plan.

Behind these comforting figures however, there lurk some important lacuna noted during the process of continuous evaluation of the programme. For instance:

Some of the schemes implemented did not have the capacity to generate sufficient income to help the beneficiaries cross the poverty line—the basic objective of the Programme.

Required infrastructure has not always been created to ensure that the productive assets are put to optimum use and the projects continue to be viable

Necessary technological support in the sphere of Industry, Services, Business (ISB) component of the programme has not always been given, and entrepreneurial development requires greater attention

Modernisation of the traditional rural industries has not been sufficiently attended to

One of the main reasons for these shortcomings is lack of extension of available appropriate technologies to sustain and advance integrated rural development A widespread and systematic advancement of such technologies as an essential input to rural development is thus urgently called for It is not that this is a new discovery Right from the inception of planned development in our country, focussed emphasis has been laid on the crucial role of science and technology The Government of India also enunciated a specific Scientific Policy Resolution way back in March, 1958 Given thus the requisite encouragement and support, impressive strides have been made in our country in the development of science and technology Nevertheless their opportunities have been availed of only by limited groups and their benefits to the rest of the community, especially the consumers of integrated rural development programme have been but incidental The technology policy statement of the Government of India issued in January 1983 specifically stresses the importance of extension of technologies for accelerating the pace of rural development and widening its horizon Since the VII Plan is on the anvil now the time is to take up this task in all earnestness as an in-built component of rural development endeavour so that the achievement of the central object of development viz establishment of the best possible biological and socio-economic environment for every man woman and child in the rural areas can be realized with the assistance of the knowledge offered by science and the powers given by machinery

Ending this dualism'

The goal of enriching, stimulating and accelerating the rural development process is to improve the levels of living of the people The internationally accepted components of levels of living are education health food consumption and nutrition, housing social security employment and conditions of work, clothing and recreation Social action to bring about improvement in all these sectors by public agencies and by voluntary institutions should be assisted by the tools of science and technology This would require an integrated body of information, research, development, execution and evaluation It would also be necessary that sectoral actions in these spheres should not be narrowly defined, and executed in isolation All efforts should be made towards their integration and synthesis as part of the overall integrated rural development process

Over time, planning and development effort has led to a kind of dualism even within the rural sector—one segment of rural society, which is 'modern' and forward looking, ready to assimilate new ideas and to make use of the opportunities offered by science and technology, and the other—a much wider segment—which is still 'traditional', static and dismissed as unresponsive to change, whilst being denied the opportunity to benefit by the knowledge of modern science These two social systems in the rural scene co-exist and function independently of each other Advancement of appropriate technology to rural areas should aim at removing this dualism

There is another kind of dualism in the technological scene A near-primeval technology, especially in the sphere of rural development, co-exists with modern sector with large-scale plants and highly sophisticated capital-intensive technology The idea is to bring about improvement in the former, which would be a complement to, and not a substitute for the latter

Hence the concept of appropriate technology The term is sometimes misunderstood to mean some kind of second-class technology Rather, the way it has been propagated give rise to, or confirm such an apprehension This is not so To quote from the Sixth Five Year Plan document

> "Rural technology should not be taken to mean primitive technology or technology of yesterday A determined effort is needed to take modern science and technology to the rural areas so that it is brought well within the material, financial and skill resources of the rural people It will be simplistic and dangerous to confine indigenous efforts to relatively simple technology for rural needs and to depend on import of technology in the high technology areas We have also to ensure an appropriate mix of small, medium and large-scale technologies in a manner consistent with our long term interests"

In decades of development endeavour, a plentitude of schemes and projects of diverse descriptions and names have been or are being, tried out by a multiplicity of agencies in rural areas Almost all of them suffer from the defect—and hence the lack of impact—of being 'imposed from above,' regarding the 'beneficiaries' as passive objects of development instead of creative makers of it Now that the possibilities that science offers are sought to be purposively brought to bear on rural development, they should be expounded in such a way that the people understand them and have a real say in the way in which they would like to make optimum use of them Indeed, involvement of local artisans should

step further Expression of their creative intelligence through interaction with scientists should be encouraged. Such artisans do have several innovations and practical suggestions to make, particularly with regard to the local situation and specific problems

Assessing technology

Scores of technologies have already been developed by the Council of Scientific and Industrial Research (CSIR) and its laboratories and various other research institutions both at the national and at the state levels, the R&D organisations of various all-India Boards and the KVIC These apart, numerous other agencies, and even individuals, have developed technologies relevant to rural development

A careful assessment will have to be made of the various technologies invented with reference to the development aims pertaining to specific areas, needs and requirements of the society, its economic and skill base, the existing socio-cultural background and the like Assessment, purely based on engineering and economic yardsticks obviously would not suffice The financial, organisational, managerial and other inputs like energy, etc will have to be taken into account and long-term social goals kept in perspective Though this may seem a truism to state like many things obvious, this aspect often tends to be neglected

In technology assessment the following broad criteria are suggested to be kept in view

The technology must be adapted to local cultural and economic conditions

The tools and processes utilised should be under the maintenance and operational control of the local people and whenever possible the technology should use locally available materials

The technology process should be ecologically sound

The appropriate technology process should constantly be innovative in order to improve the human and material conditions of the local people through the use of new organisational and technological devices

The cost of technology used should take into account the low-level stagnant finances of most of the rural population

Even the most perfectly designed and superbly executed technology cannot last if it is not, or cannot be, integrated into the village society

Identification of technology need has to be a two-way process

the demand coming from the ultimate users, and

perceived needs based on the empirical findings of various technical institutions

The planning phase

It has now been well understood and recognised that the practice of considering science and technology as a separate sector should be given up, and that endeavour should be made to ensure that the bulk of science and technology effort becomes an integral part of planning for all economic sectors In other words, science and technology should be incorporated into the profiles of planning their induction in promoting developmental effort should inform the various stages of the planning process This has particular applicability to the area of rural development

Various technologies are available—from the 'elementary' ones to those in the 'frontier' line—which could, with advantage, be employed in the execution of the various components of integrated rural development The suggestion is that this should be done in the stage of programme planning itself For instance

In conserving water resources and ensuring better water management and soil use, instead of the conventional, time-consuming ground survey of water-logged, saline or alkaline areas, the services of the National Remote Sensing Agency could be utilised

In constructing rural roads under the Minimum Needs Programme the low-cost technique for rural road development design by the Central Road Research Institute could be of use

In the supply of potable drinking water to problem villages solar stills for distillation of brackish water developed by the Central Salt and Marine Chemical Research Institute could be of relevance

As regards biogas for rural communities, the new developments in integrating biogas units with the human settlements, propagated by the Housing and Urban Development Corporation (HUDCO) may be of interest and use

It will do well to remind ourselves at this stage that integrated rural development is not only an aggregate of diverse schemes but is a basic concept, which should at all time influence the choice of programmes and priorities, and the manner and sequence of their implementation In brief, the following may be kept in view

Integrated rural development calls for a set of projects and policies so designed and coordinated that it will raise the whole pattern of living of a given rural population from one level to a markedly higher level within a few years, and will in doing so create a society which will thereafter be economically and socially dynamic

Integrated rural development is the conscious and systematic consideration, evaluation and

manipulation simultaneously of the components and linkages of the rural system to achieve a planned development objective

Since in a rural society, the development process confronts a plural value system, characterised by equally valued primary goals, the objective of integrated rural development is accommodation to the realities of a plurality of primary and instrumental objectives

Adoption of scientific principles of planning and management to keep in tune with these and other complex components would also be necessary

The crux of the matter!

This, really, is the crux of the matter Many technologies have been developed relevant to rural development, both in the sphere of increasing production productivity and employment generation, and in the area of human welfare, community services and reduction of wastage and drudgery Nevertheless these have rarely percolated to the field Efforts in this area have been but scattered and sporadic

There would be no need to establish a 'separate delivery system' for this purpose Best use could be made of the existing institutional infrastructure created by various organisation like National Research Development Corporation (NRDC) KVIC, District Rural Development Agencies (DRDAs), District Industries Centres (DICs), Small Industries Services Institutes IITs Polytechnics and the like

In the technology transfer process in the rural industries sector, DICs—which unfortunately have had a rather chequered career—could make a valuable contribution Set up to provide assistance to rural artisans, village and small industries at the pre investment, investment and post-investment stages of production under one roof, the DICs could be a good institutional mechanism for transfer of technologies, in addition to conducting industrial potential surveys supply of raw-materials, machinery etc, and assistance in marketing Here, a close working relationship between the DRDAs and DICs will have to be forged

In order to involve the locally available scientific talent in the dissemination of technologies to rural areas and to provide necessary interaction between the project administrations and the scientific community, a district-level Committee of Science and Technology may be constituted It could consist of the Project Director of DRDA, General Manager, DIC Principals of Engineering Colleges/Polytechnics IITs Professors in Science Colleges, representatives of leading voluntary agencies and the District Manpower Officer The State Department for Science and Technology and Rural Development may provide the required support and guidance to these District level Committees

The institutional balance sheet

Various institutions could and should be involved in the process of transfer of appropriate rural technologies In fact a number of structured institutions have been engaging themselves in this task On a review of their work in this behalf, an institutional balance sheet has been attempted and presented below

Type of Institution	Plus points	Minus points	Needed changes
Universities IITs	Possess diverse highly competent technical manpower resources quality of research unexcelled	Rural technology research still not generally accepted as a legitimate function of these centres Excellent resources for this activity may not permit in action focus these institutions usually have a strong urban bias organisational innovation in the highly structured set up difficult to obtain	Exposure to actual field conditions systems of adoption of villages involvement of selected faculty members and research students in the actual transmission of technologies, linkages with voluntary organisations joined in the same pursuit
National Laboratories	Availability of scientific personnel of competence possibility of specialisation and well-defined problem focus	Often do not have equipment connection with application of research findings possibility of too narrow a specialisation inadequate appreciation of the rural scene especially the sociological and cultural aspects on acceptance of new technologies	Closer links with extension agencies and greater exposure to rural realities problem-oriented rather than discipline oriented internal organisation

,NGOs/DRDAs	Alive to actual field problems needs and possibilities	Lack of R&D capability limitation of organisational resources diffusion of functions (last mentioned applies to DRDAs)	More direct and continuing linkages with R&D capabilities, strengthening of manpower resources, revision of performance criteria (the last mentioned applies more to DRDAs)
Polytechnics &	Quite alive to actual field problems needs and possibilities availability of a vast reservoir of skilled technicians and craftsmen including a large body of student population	Lack of R&D capability, absence of strains of financial and organisational resources lack of technical guidance [illegible] of functions	More direct and continuing linkages with R&D capabilities strengthening of resources and revision of performance criteria

The attempt now should be to

—strengthen capabilities of institutions already working on appropriate technology questions

diversify functions of institutions with capabilities that fit appropriate technology issues, but are not currently being employed in that manner

What CART does

One of the main reason for establishment of CART is to make the endeavour of transfer of technology to the rural people speedier and systematic Its objectives, include

(i) To act as the national nodal point for coordination of all efforts of development and dissemination of technology relevant for rural areas for sectors other than those covered by ICAR and its sister bodies

(ii) to act as a catalyst for development of technology appropriate for the rural areas, by identifying and funding research and development efforts by different organisations

(iii) to act as a clearing house of information and a data bank

(iv) to disseminate knowledge of rural technology to manufacturers of machinery tools equipment and spare parts so that large scale production of technically improved machinery etc is carried out in the private cooperative and public sectors, and

(v) to act as conduit for transfer of appropriate technology to government departments public sector undertakings and members of the public

The Council became operational only at the commencement of the current physical year As an immediate measure, some selected technologies have been chosen in the priority areas indicated in the technology policy statement of the Government of India and steps are taken to disseminate them to identified pattal areas through whichever institutional agency is found most effective in that particular area

On this basis the Council has so far accorded financial assistance for 18 projects with an aid-component of a little over one crore These projects are designed to improve the levels of living and elevate to greatest extent possible the quality of life of the poorest of the rural poor

It is recognized that in the process of transfer of technology, a fundamental pre-requisite is to build up an information system and data bank The information should be appropriate, accurate adequate, timely and organised CART is engaging itself in the establishment of a data bank, development of a subject-oriented documentation system in the wide range of rural technology surveys for the assessment of information needs information retrieval and analysis, and user education In course of time there might be need of such a documentation system being built up at the regional and State levels too

Seek and ye shall find
There is something to be found
Here now is a cart,
Look, the wheels go round

—A ZEN VERSE

Priority for energy conservation

THE SEVENTH PLAN working group on science and technology has identified seven "thrust areas" including agriculture, biomass fertilizers, energy conservation, power, health, conventional and non-conventional energy sources and metals for intensive Research and Development work

In the field of agriculture, the group observed that further applications of fertilisers might not necessarily result in higher agricultural yield It recommended to introduce biomass to help productivity The group also thought that in the agricultural sector a lot of water and fertilizers were being used These could be reduced substantially through better technology application in the sector [illegible]

Learning to own technology

S S Kalbagh

The poor taking to technology is an uphill task and what is urgently needed today is the creation of the process of preparing the poor to own technology for their own sake. The task, says the author lies through education of the right type, and how it could be done he describes here.

THE NEED FOR RAISING people above the poverty line is urgent and great efforts are focussed on identifying technology that can help in this. It is therefore necessary to understand the different facets of Technology Transfer to ensure that we reach in the right place for suitable technology and the ground is prepared for it to take roots.

The technology ladder

When technologies are transferred we refer only to the Technology Package. Every Technology Package implies availability of certain level of skills both technical and organisational, that are available to the user. If there is a mismatch between the technology package and the users skills, the technology will fail. The Technology Package is like a school text book, a fifth standard boy can make little sense from the 5th standard book. So the different technologies can be arranged according to the level of skills presumed to be available to the user. This grading can be considered as a Technology Ladder. Every user whether an individual an organisation or a society/community can benefit by technologies that match his/their skills. After he uses these for some period his level of skills rises and he can then reach for higher technology but not before.

When we make public a technology such as the use of high yielding varieties of wheat and rice, only farmers with a certain level of skills benefit by it. Others will end up in disaster even if the government arranges all the financial inputs. Thus the green revolution benefited farmers who were already familiar with some modern practices and the less skilled namely the poor were left high and dry.

Thus if we want to take the poor above the poverty line we must extend our technology ladder downwards below the technology of high yield agriculture.

The return on skills employed

A financier always calculates return on capital employed. He will want to invest his capital where the returns are maximum. Every individual has acquired various skills. These are his capital. He employs them on his job and gets a return on the skills in the form of his salary. As he becomes skilled through experience and self effort, if the returns don't increase, he takes another job where his higher skill is utilised and he gets a better return or salary. This also applies to industries and even societies as a whole. As an industrial house acquires experience and skills, any of the simpler operations it started with

are no longer attractive to it In fact because it now has a more skilled labour force, naturally better paid, it cannot afford to get the less skilled jobs through them and therefore gives out these jobs on contract or otherwise to others with lower levels of skills Thus we have the concept that any group operating some technologies will, sooner or later find the return on skills employed to be diminishing and therefore will be forced to move up on the technology ladder to remain competitive They will thus vacate the technology for people with lesser skills This is happening on the national scale where India is now exporting machines to U S A because they do not find it economical to make them themselves

So when a user chooses technology, he cannot take one that is too high up on the ladder, because he does not have the skills and he will not choose one too low also, because the returns on his skills will not be adequate It also means, once you get on the technology ladder, you can move up as somebody else vacates the technology above yours Everybody can keep moving up

The technology culture

Let we now see what are the skills that are required even at the bottom of this technology ladder, because without these no one can benefit from even the simplest of technologies These skills are so fundamental that most will not even recognise these as skills to be acquired through education—formal non-formal or incidental In fact when a sophisticated industry is located in a backward area, they face a training and discipline problem which they blame on lack of industrial culture but is really a lack of skills

These are the basic skills that need to be given through education, right from primary education and some even from preprimary stage This education must enable them to get on the technology ladder and learn how to climb up, by themselves

Let us enumerate some of the important skills that they should acquire and which should be so ingrained that they become an "instinct" and part of their culture

1 *Communication* This is so fundamental a skill yet it is sadly lacking in most Very few can report an incident coherently by themselves or convey a message accurately Equally they cannot understand a sequence of instructions and follow them

Adding to the problem of communication, is the ignorance of some simple concepts such as rate efficiency, etc

2 *Visualisation* This is another skill that is acquired through practice and is fundamental to creativity, planning and many other key activities

3 *Sense of 'Geometry* a feeling for directions, parallels, equidistance, right angles etc

4 Classification and pattern recognition

5 Ability to concentrate on the job in hand

6 The three R's—Reading, Writing Arithmetic

These are very basic skills that can be acquired through practice Of course, there would be differences between individuals, but there should be a minimum that every one must reach These are the skills that need to be imparted from the primary education stage

Learning by doing

How can these skills be imparted? Certainly not by textbooks These are skills learnt by doing Learning by doing is something more than on-the-job training When the mind stops working, the hand can activate it, this is the role 'doing' has to play in learning' For most of our primary students, this will also be an easier way of learning

Learning by doing implies use of materials, mistakes made time taken Yet in the long run, it will work out cheaper, because it is a surer and more lasting educational method

Integration of education with development

Learning by doing implies use of materials and investment in time—therefore higher cost This can be more than offset by using a productive activity or a development project as a substrate for the educational process This is particularly important in the 15-25 age group where the skills taught are more sophisticated But the idea is also applicable to the 5-14 age group in the primary school

As an illustration let us consider some productive activities which can be used to integrate the development of mental skills, the manipulative skills, and creation of wealth.

1 *Collection of waste material* e g animal dung, weeds, oil seeds from trees, seeds of leguminous plants scrap paper, plastics, metals etc The activity of collection segregation grading etc provides for learning by doing' of the following mental skills viz, communication visualisation classification measurement and also encourages qualities such as perseverence, competitive as also collaborative spirit Economically it is beneficial to the society, because it enables better use of waste materials dung for biogas plants scrap for sale legume seeds for poultry feed, weeds for composting The same activity also develops physical skills by teaching how to handle large loads compacting, baling, grading, grinding etc

2 *Raising nursery plants* Children can raise and care for not only seedlings for social forestry but also vegetables for the kitchen garden They can

farm observation records sketching and farm soil types and properties physiology of germination handling and use of pesticides, importance of irrigation methods sunlight etc It will be socially beneficial not only generating ecological sense but also for introducing hybrid vegetable seeds etc

3 *Poultry & Goats* Care of poultry and goat normally done by women and children and provides an excellent opportunity for education in various subjects, including nutrition health arithmetic nature studies and skills such as making baskets, nets fencing etc Also it gives an opportunity for introducing better breeds crossing different rearing systems etc

4 *Brick making* Brick making by moulding soil cement blocks is an excellent way for giving the basic skills and producing something useful It also gives a feel for the productivity concept

5 *Weaving, sewing knitting and netting* These are other technologies that primary school students can practice for education and benefit to the society

The above technologies should be taught, not so much as money making activities, but primarily as educational media. They will produce sufficient physical assets to pay for the cost of materials used but their educational effect will far outweigh the wealth produced This is only an illustration of activities and different areas could plan many other technologies for similar effect

This kind of education can blend with existing school curriculum, if the system is made more flexible All the subjects, reading, writing, arithmetic history, geography and science can be taught through such activities □

(*Continued from page* 6)

Taking technology to the poor

directly extended to field conditions and appropriate training would have to be provided to the village workers and others who have to actually construct their houses using their own hands and available local materials It is unfortunate that in some of the cases where technologies generated in the laboratories are not transferred and assimilated amongst the people for whom they are generated It is this aspect of the technology utilization which requires better attention and commitment from scientists, engineers planners decision makers as well as the local managers and village leaders who have to establish close communication with each other if the technologies from laboratories have to reach the field In this context the various experiments and programmes entitled "Lab to Land" initiated by Indian Council of Agricultural Research are relevant and this approach may have to be perhaps extended to various sectors of development

And the challenge!

In the above paragraphs few selected sectors of social economic development have been chosen to illustrate the important role which can be played through generation application and propagation of technologies which can be beneficial to our large rural population and the weaker sections of our society Unfortunately, generation of technology is only one end of the total developmental chain Not only strong linkages have to be developed amongst the various sectors of the developmental chain but it has to be ensured that inputs required to strengthen each link of this chain are provided in adequate measure and in time These inputs are in the form of financial resources managerial resources material resources manpower training etc It is thus clear that only when the total developmental chain is strengthened through the measures indicated above can one hope to fully reap the benefits of the technologies which would be generated at one end of this chain There is no doubt that application of technology is an important element for improving the quality of life of our masses but it must be realised that this is not the only panacea to our problem of national development During the seventh five year plan all Science & Technology agencies laboratories universities IITs and other academic and research institutions are expected to analyse the contribution that they can make to rural development and devote an appropriate part of their resources and effort for it these efforts can be orchestrated in the total context of the socio-economic development the basic objectives of our Scientific Policy Resolution of securing for the people of the country all the benefits that can accrue from the acquisition and application of knowledge will be met in the not too distant future □

Investment on science and technology

INVESTMENT ON SCIENCE AND TECHNOLOGY has increased from Rs 20 crores in the First Plan to Rs 3,367 crores in the Sixth Plan

Following the enlightened public policy India has today over 2 million scientists and technologists This is the third largest number any country has in the world

Rural India is clamouring for benefits of science and technology The vast reservoir of science and technology the trained and skilled scientific talent that India has today, can change the face of the country if it is exploited for improving the utilisation of material and human resources thus raising the living standard of the rural population

In the field of agriculture, science and technology has created the required production potential It is the inputs and the management which can now bridge the gap between the potential and actual This process of bridging the gap between the potential and the real can very well be hastened if scientific temper is resorted to as the most important input and allowed to permeate every Indian life

The bullock cart and the rural poor!

N. S. Rameswamy

Making out a forceful case for proper realisation of the role of Draught Animal Power (DAP), particularly bullock cart, in alleviation of rural poverty, the author asserts that it is our "poverty of ideas and concepts in S&T and O&M to meet the requirements of the poor in the non-OS largely responsible for the poverty of the masses. Poor people and animals—both dumb and helpless in many ways—watch the spectacular success of S&T and O&M in the organised sector. They hope that their chance also will come sometime, hopefully, in the Seventh Plan."

INDIA CAN LEGITIMATELY be proud of her achievements in various fields such as, quantity and quality of scientific and technical manpower self-reliance in industrialisation, acquisition of knowledge and skills in space and nuclear fields etc But, in spite of vigorous efforts on the part of the Government, we have not been able to channelise the inputs to, and benefits of, development to the lower one-third of our population, who continue to struggle below the poverty line No amount of sophistication in high technology is a solace to the deprived millions

It is against this context that we have to look at the role of Draught Animal Power (DAP), particularly bullock cart, in reducing poverty by increasing employment and earnings of those dependent on DAP for livelihood

Why poverty persists?

To the modern intellectuals, bullock-cart is a symbol of backwardness During the last ten years, a great deal of interest in DAP has been generated by the work done by Indian Institute of Management Bangalore and many other in modernising the DAP system But the progress alas has been at bullock cart pace only mainly on account of lack of policy and financial support from leaders planners administrators and institutions concerned with rural development

The basic reason why poverty and privation persists because inputs of Science and Technology (S&T and Organisation and Management (O&M) are largely concentrated in the organised sector which forms only

twenty per cent of the working population Out of about 280 million people in the work force, only about 60 million could be considered to be in the organised sector, the balance 220 million being in the so-called informal, decentralised, dis-organised, unorganised or non-ogranised sector—hereafter referred to as non-OS Most of the poor people are in the non-OS, whether they be in urban or rural areas

The instruments of production of those in the non-OS are crude and inefficient S&I and O&M critical resources for productivity and development –are not available to this vast non OS Only by upgrading this instrument of production by applying S&T and O&M, we can hope to elevate the economic status of those now below the poverty line The state of affairs in DAP and bullock-carts is classic example of the pitiful conditions existing in the non-OS, where millions are eking a subsistence existence, due to low productivity It is also a reflection of our distorted priorities and inability to manage and develop the non OS

DAP, how useful !

DAP is an outstanding example of mass application of appropriate technology DAP is complementary to mechanised system i e tractors for ploughing and trucks and vans for transportation While the ultimate goal should of course, be one of mechanisation and automation, we may, unfortunately, have to depend on DAP for fifty more years to come Herein lies the need for upgrading the DAP system in order to increase its productivity through S&I and O&M inputs

It would be useful to have a broad idea of the order of magnitude of contribution of DAP to the Indian economy Besides young stock, there are 80 million work animals or draught animals (DAs)— 70 million bullocks, eight million buffaloes and one million each of camels and horses On the basis of an average of half horse-power per DA they make available about 40 million horse power, and that too in as many locations DAs provide power to plough two-thirds of area cultivated Two-thirds of rural freight is also carried in bullock-carts In most villages carts are the only means for passenger transportation as well

The market value of DAs, ploughs and other agriculture implements, carts and the associated infrastructure for manufacturing and repairs may be of the order of Rs 10,000 crores

It has been estimated that there are 15 million animal driven vehicles (ADVs) in the country, most of them bullock-drawn The market value of ADV system, including cost of animals may be more than 5,000 crores of rupees It has also been estimated that the DAV system transports over twenty billion ton kms of freight per year

Replacement of ploughs by tractors and tillers, and carts by trucks and vans—which will possibly take place slowly over the years—may need an investment of over 10,000 crores of rupees

Nay, it is inevitable !

Incidentally, the UN|FAO system has recognised DAs as a source of renewable energy DAs form part of milk-fibre-meat system They also have an organic link with other systems, such as agricultural production, bio-gas, social forestry, environment, rural transportation soil erosion, etc

DAP system seems to be inevitable because we have over 50 million small holdings with less than one hectare in area, where tractors or tillers are uneconomical Similarly, for small-scale transportation of goods and people, over short distances of about 20 kms and where travel time is short compared to loading and unloading time, ADVs are more appropriate than mechanised systems Trucks and vans need heavy loads, and travel long distances to become economical Fragmentation of farm holdings is continuing even now, and thus the need for DAs for ploughing would continue to be critical for many years

The next issue which ought to be clarified, is that we have to per-force modernise the DAP system, as otherwise depending on DAP system will continue to be poor In other words, through modernised DAP and ADV systems we can generate more employment and earnings, and that too for the poorer and unskilled sections of our population Wastages in the system and potential for improvements and benefits are described below

Out of the estimated 15 million bullock carts in the country, about 12 millions are village based, and about 3 millions are urban based Rural based carts also ply between urban and rural areas, transporting inputs and outputs

Cart, the old and the new !

The main features of traditional cart are large wooden wheels with iron rims loose bearings made of mild steel, mild steel axle and ball bearings, wooden platform and pull beams made of wood or bamboo etc There are literally thousands of designs, varying in capacity size, structure materials used etc Carrying capacity ranges from half to one tonne Cost of a double bullock-car varies between Rs 1,500|- to Rs 4,000|- depending on capacity and quality of materials used

During the last 40 years, major improvements have been —

(a) pneumatic design introduced in the forties by Dunlop Company incorporating steel wheels, ADV tyres made by Dunlop, taper roller bearings etc By these three improvements the carrying capacity has been increased to three tons

(b) Use of worn-out wheels, tyres and axles salvaged from discarded trucks and cars Carrying capacity is increased to about two tons

(c) Special purpose carts for urban areas, mostly single animal drawn, to carry water, kerosene and light materials

(d) Four wheeled carts, as opposed to the traditional and popular two wheeled ones, with hard and/or pneumatic tyres

It has been estimated that about half a million carts have been modernised with the Dunlop design, and another half a million perhaps by way of folk improvements as in (b) (c) & (d)

Total number of carts in the country has remained roughly the same during the last ten years Aim of modernisation would naturally be to fit all carts with steel wheels, smooth roller bearings and pneumatic tyres The exception would only be for carts which have to ply in slushy and muddy terrains particularly in high rainfall areas In China, all carts are fitted with steel wheels and pneumatic tyres

How good the new one !

By introducing steel wheels pneumatic tyres and taper roller bearings cost may go up by about 50 per cent but carrying capacity can be trebled with less draught burden on the animals DAs can work longer hours, at faster speeds they may also live longer on less work ration At present a good part of their draught effort is wasted due to high friction at the bearing and rolling surface as well as drag created by the iron rim cutting into road surface

Such heavy duty carts are already popular in urban areas and for transporting sugarcane from fields to sugar factories Studies show that there is sufficient load in the urban areas for carts with two to three ton capacity Where load availability is not that high, the idea should be to go for single-animal carts rather than double animals It may be noted that a single animal cart will be cheaper than double animal cart-both in terms of investment and recurring cost for maintenance of the animals

Introduction of pneumatic tyres will almost eliminate the tremendous damage now being done to the roads due to the iron rim cutting into road surface Cost of repairs is estimated to be in hundreds of crores of rupees Benefits to the society arising out of reduced damage to road will by itself justify increased cost of the cart or cost of modernisation at public expense

And the gains . !

Increased capacity means many other advantages as well Earnings will go up by two to three times which will make it possible for the carter to feed the animal well At present earnings are low and therefore, animals are not fed adequately In addition since their draught power is wasted they are unable to haul normal loads with ease or comfortably In order to goad animal to haul freight beyond their normal capacity a variety of cruelties are inflicted on them-beating whipping twisting of tails, pricking with iron nails etc Besides suffering to the animals, the value of skin is reduced considerably It has been estimated that export value of leather can be trebled if the skin of draught animals is not bruised by such harsh treatment

The next important improvement to be introduced is to reduce its tare weight Trials have shown that weight can be brought down by 50 per cent, without affecting carrying capacity Further, steel frames should be used in order to conserve scarce wood and also to add strength to the frame

Provision of a brake is a must At present, animals do using their neck to slow down and stop the cart A smooth yoke with provision for spring loading, would improve effectiveness of draught effort required, simultaneously reducing damage now caused to the animal's neck

Improvements mentioned above have already been proved to be feasible and beneficial The main problem has been to make manufacturers and cartmen aware of the potential benefits of improved carts, which is the role of O&M mentioned earlier A massive extension is required to implement these ideas and improvements to cover all the 14 million traditional carts

Still better version !

The next major improvement which has not been tried in India and which is tremendously significant and beneficial is the adoption of the Chinese type double-piece yoke In the south Asian design, the traditional yoke which is often rough sits on the neck of the DAs Third point of the load is the neck itself, the two wheels being the other two points Besides hauling the freight, DAs have to carry a vertical load on the neck Besides the draught effort wasted on account of this vertical load the major damage is due to constant rubbing of the yoke against the skin The neck of the animal is injured by way of neck sore callosity etc It has been estimated that millions of animal years are lost due to injured necks It is a common sight to see otherwise healthy animals being taken to slaughter because of injured neck

In order to unerstand the double piece yoke system one should visualise a single animal cart The first yoke-a canvas trap-rests on a frame which is fixed on the back of the animal A soft pad between the frame and the skin protects the skin The yoke carries the vertical load The second yoke is a piece of rope connected to the pull beam which is placed around the neck of the animal This yoke is used for hauling purpose only When animal moves forward second yoke comes into play When it slows down or stops the second yoke is decoupled A back strap like in the case of horse cart taken round the rump of the animal is used to slow down and stop the cart The neck of the animal is thus used only for hauling and there is no injury to the neck

And still more gains !

There are many advantages to this device First of all shock and rubbing on the neck are eliminated and the vertical load is spread evenly on the back of the animal thus increasing the effective draught power Secondly one or more other animals can be hitched to the cart either by the side or in front, like in a dog-sledge in order to increase the draught effort for heavier loads to be pulled An interesting point to note is that the second and or third animal can be of different species sizes, strengths etc This enables use of younger animals also Cows which have stopped lactation and male calves of buffaloes and cows can be put to work as the second animal

This factor opens up tremendous possibilities for increasing utilisation of potential draught power At present, male calves of buffaloes are killed off soon after birth since farmers are unable to rear these animals up to the age of two when only then can be hitched to carts With the double piece yoke system, they become productive from age one Five millions of animals, thus slaughtered prematurely can be reared and used as draught animals It is estimated that ten million farmers do not have DAs at all to plough These young calves could be given to them, as part of rural development programmes which incidentally, would increase agriculture production as well

Big and better use !

DAs in urban areas are utilised for more than 300 days a year In rural areas, DAs are used only for about 100 days-about 50 days for ploughing and another 50 days for carting to nearby towns This means that DAs are not utilised for over 200 days in a year Since DAs have to be fed throughout the year (unlike machines) feeding becomes a strain on the farmers who, more often, keep them on maintenance diet, which means on semi-starvation conditions With their health deteriorated, DAs are unable to plough with tease when the season starts Again, they have to be goaded to work with torture methods About 70 million DAs are thus under-utilised, or non-utilised, for most of the years, which is a great wastage to the farmers and to the economy

Modernisation of the cart system opens up new possibilities to utilise these DAs for more number of days First of all with improved plough, single animal ploughing can be introduced in farms which are less than one acre There is no need to use two animals, as at present Simultaneously, with an improved cart, a single animal can carry one tonne or more easily During the off season farmer can take the DAs to urban areas for professional carting purposes Even if we are able to generate 100 days of additional work during the off-season by employing the DAs in urban areas on a professional commercial basis, 70 million DAs would generate 7000 million man days of work Even assuming a meagre net income of Rs 10 per cart per day, this would generate Rs 70,000 millions, i e, Rs 7,000 crores per year This amount would accrue to marginal farmers and landless labourers as well as unskilled people in urban areas A system of hiring of carts can be introduced in urban areas for thus helping landless labourers and unskilled workers

Opening new possibilities !

It is easy to introduce wheeled ploughs for dry farming The concept of the dog-sledge system, described earlier for carting, can be introduced for ploughing as well In India, we are used to double-animal ploughing for both dry and wet farming conditions, an even-bar system will enable farmers to hitch animals of different species, sizes and strengths, thereby increasing draught power wherever necessary for deep ploughing or using heavy implements

It has been estimated by the National Commission on Agriculture that power input to agriculture has to be doubled in order to increase productivity for optimum output It is well-known that China is able to produce twice our output per hectare, as they have introduced improved cultivation methods, besides larger quantity of fertilisers per unit area China has also been able to put up eight million bio-gas plants India also has a programme, but we are unable to tap our potential due to lack of O&M Bio-gas plants will upgrade the DAP system as a whole

With cross-breeding programme gaining prominence in the country, there is a doubt whether male calves of cross-bred cows can be utilised for ploughing and carting Studies have already proved that these bullocks are equally good for ploughing, if only they are used during morning and evening hours, and hot parts of the day are avoided At present, male calves of cross-bred cows are slaughtered off, soon after birth

And these buffaloes !

Buffaloes are excellent DAs It is a pity that its value for draught purposes has not been realised in India, though buffaloes are popular DAs in Haryana, Punjab and Meerut division of Uttar Pradesh

Camel carts are already improved, though there is scope for further improvements China has a regular programme for breeding donkeys for carting in rural areas They have been able to raise eight million donkeys for work They can haul even half a tonne India can breed donkeys and mules for carting in rural areas In fact, mules and draught horses are better for carting in urban areas where they are faster

The DAP system has a close link with other sectors/systems, like agriculture production, bio-gas, milk, meat, social forestry etc The whole of DAP and associated systems have to be upgraded, which will benefit the poor a great deal There is no national policy now to upgrade the whole system Proposals for the establishment of institutions for upgrading

draught animal power system are under the consideration of the Government of India The Indian Institute of Management, Bangalore, is preparing a report on the status of DAP, which will identify priorities and areas for modernisation.

And this slaughter system!

The DAP system would also get upgraded, if slaughter system is improved At present, over 40 million large animals are slaughtered every year for meat They are taken to slaughter houses on foot, which results in a great deal of wastage Besides loss of approximately ten kgs of meat per animal, animals are ill-treated enroute, which damages skin and lowers its sale value Slaughter methods are also brutal and crude, which result in colossal losses to the country in economic terms, not to talk of untold suffering to the helpless animals DAs suffer whilst at work and in death It is a shame that a country, which reveres animals, is ill-treating them needlessly, with no corresponding gain to humans

A proposal to set-up an Animal Board to promote and oversee all aspects of the animal system is under the consideration of the Government

Agriculture University and Indian Council of Agricultural Research institutions are taking increased interest in modernising the DAP system The Seventh Plan is expected to give a new impetus to this modernisation drive Draught animals, ploughs, carts and other associated infrastructure for production and maintenance of implements and carts on the one side, and draught animals on the other are the main instruments of production of millions of poor people in India, particularly in the rural areas By providing S&T and O&M to this sector, we can hope to make an attempt to remove pervasive poverty, now afflicting most of our population

S&T and O&M, though they are sophisticated in India today, are not of any consequence of social relevance to the poor in asmuch as they are not available for over 200 million workers and farmers in the non-OS who need them more than the organised sector Let us hope that the Seventh Plan will give some attention to this neglected sector

The symbiotic relations!

Man, Animal and Nature are in symbiotic relations Poor people depend on animals for livelihood There is a direct link between poverty and the neglect of the animal system By upgrading the system, we can make a dent on poverty A great deal of attention is now being paid to the milk system But the DAP and slaughter practices are neglected Poverty of ideas and concepts in S&T and O&M to meet the requirements of the poor in the non-OS is largely responsible for the poverty of the masses Poor people and animals—both dumb and helpless in many ways—watch the spectacular success of S&T and O&M in the organised sector They hope that their chance also will come sometime, hopefully, in the Seventh Plan

Promising technology identified

All India Coordinated Research Project on Harvest and Post-harvest Technology, has identified the following machines and devices, aimed at saving post-harvest losses

Pea-punching device

To facilitate and quicken the dehydration of peas and also prevent its rewetting, a manual pea-punching device with a capacity of 10—12 kg/hour has been developed at Jabalpur The cost of this device is around Rs 350 00

Cassava chipping machine

A device for chipping cassava with a capacity of 60 kg/hour (chip thickness of 5 mm) has been developed This capacity is nearly four times that of hand chipping. Chipped cassava is dried for grinding.

Cardamom dryer

A tray-type cardamom dryer of 25—30 kg capacity costing about Rs 10,000 (including motor and blower) has been developed It takes 11 hours to dry cardamom from 80 per cent moisture wet basis to 15 per cent moisture wet basis using hot air at 55°C The operating cost is Rs 55 per quintal of cardamom

Bamboo bin for onion storage

A concentric bamboo bin of 300 kg capacity for storing of onions has been developed The initial cost of the bin is Rs 70 and storage cost Rs 20 per quintal per annum

Hidden infestation detector

A simple, low-cost device for detection of hidden infestation in grains has been developed The device costs about Rs 100 and takes only 10 minutes for one sample Its performance compares favourably with the existing methods equipment for infestation detection

Pearler for millets

A one-hp electric motor powered Pearler for millets, costing Rs 1700 has been developed The operating cost of this machine is Rs 2 70 per quintal against Rs 54 00 per quintal in the case of traditional hand pounding. □

Appropriate technology in rehabilitation aids

P K. Sethi

To provide rehabilitation aids to the persons who have lost their limbs anywhere in the country our profession will have to shed its prejudices by utilising the enormous reservoir of native talent available in every town and village Such a strategy, the author asserts, will lead to the satisfaction of basic human needs, generate self-reliance, demystify medical knowledge, encourage social participation and advance developmental objectives

ABOUT 20 YEARS AGO we at Jaipur decided to set up a workshop for production of appliances for the handicapped Our objective was primarily to cater to the needs of the neediest i e the rural and poorer section of our society The affluent, we felt, could continue to go to Poona or Bombay and procure an artificial limb or a caliper at a cost which often exceeded the annual per capita income of a rural poor

Our aims were two-fold The appliances should be as inexpensive as possible and a patient should not be required to travel long distances to be able to get them.

Very soon, however, we started running into a contradiction As is customary with us, we like to follow the trends in the West and the designs of our appliances were no exception These were all conceived and developed in the West We found, to our surprise that most of our polio patients were not really using the calipers and many of our amputees were reverting back to crutches This disturbed us and so we started closely questioning our patients to understand the reasons for rejection of these appliances It was then not difficult to identify some very obvious features in the design of these appliances which made them quite unsuitable for the average Indian life style For example the foot-piece of a western artificial limb has to be hidden and protected by a shoe Without a shoe the limb cannot be used Shoes are normally not worn by most Indians If we want our artificial limbs to be used at home, by our women, by farmers working in their fields, in places of worship, we had to do away with the shoe This meant that the footpiece should be suitable for barefoot walking The moment the outer facade provided by the shoe is peeled away, it becomes essential that the footpiece should cosmetically simulate a natural foot Also, its delicate material needs to be replaced by a waterproof, durable exterior which can withstand walking on the rugged terrain of our rural landscape Not only this, most of our countrymen squat and sit crosslegged on floor Squatting

requires full dorsiflexion at the ankle During cross legged sitting, the outer border of the foot is pressed inwards, twisting the foot into inversion and internal rotation Wearing a Western limb, an amputee cannot work sitting in a cross-legged position because the twist on the footpiece is transmitted to the stump causing unbearable pain

Additional freedom of movements are therefore necessary in a footpiece to allow our amputees to pursue a normal life style The footpiece should also possess a degree of suppleness which allows it to adapt to the uneven surfaces on which a villager is required to walk The Western, chair-sitting amputee never needed these movements and their footpiece, understandably, does not possess these attributes Similarly, various problems were encountered when scrutinizing the designs of calipers for polio patients

We therefore formulated a different set of design criteria and tried to work out appropriate theoretical constructs We approached our formally trained prosthetists to prepare some experimental footpieces incorporting these ideas, but it was evident that their education had never prepared them to think of alternatives and they did not possess the necessary skills or the aptitude required for this work All they can do, to borrow a phrase from Professor Amulya Reddy is to reproduce 'blurred xerox copies of Western appliances'

It was at this stage that the author approached our traditional craftsmen He had seen their skills and felt that possibly they could help us The understood the problem and prepared a die, using the traditional sand-casting method We were thus able to produce develop and refine a completely different design of a footpiece which looks like a foot Its interior contains a design which enables squatting sitting cross legged on floor, farming, irrigating fields working in wet fields, and walking barefoot on uneven ground Heavy work such as pulling a rickshaw becomes easy So good is the adaptability that even scaling a vertical rock-face or climbing trees is no problem You would agree that a design which permits these activities can be considered as an appropriate design The element of rehabilitation is 'built in' in the design of the limb i e a farmer can go back to his village and pursue his original vocation and not migrate to a town to look out for a sedentary occupation

Break through in footpiece

These traditional craftsmen, learning at their masters' feet, have fantastic skills and a love for working with their hands And contrary to popular belief they have amazing ingenuity With simple tools they are able to produce decorative objects which fill our handicraft emporia A statue of a village amputee was made without any casting from handbeaten aluminium sheets by one of our artisans and is almost a piece of art For persons who can shape metal with such skill, making an aluminium artificial limb is a child's play So why use expensive polyesters which are now fashionable in modern limbs? We switched on to making metal limbs, which our artisans can make with such speed and dexterity that orthopaedic surgeons from abroad are taken aback when they find a trial limb being fitted in 45 minutes from the time of taking the measurements It is this simplification which has led to an incredible rise in our work out-put from 60 limbs in 1975 the output is 1500 limbs in 1980 Also, the cost of such appliances is a fraction of orthodox western limbs A below knee prosthesis costs merely as much as a pair of fancy shoes

Once this breakthrough was achieved in the case of the prosthetic footpiece, we felt intellectually liberated to examine critically all the designs we have copied from the West A series of new designs have been developed As a result of working with our local artisans I have a tremendous respect for their native skills and self reliance One often encounters amazing examples of ingenuity of design in peg legs which many of our amputees walk on, and which the village carpenter conceived without any training in prosthetics A most ingenious, airy, cool and adjustable socket, using strips of bamboo was designed Our hot climate makes it a much more acceptable design then the biomechanically superior but unbearably hot modern total contact socket The concept is beautiful It is now up to us to refine such attempts If we adopt a general policy of exhorting these artisans and learn how to communicate our requirements to them, they are perfectly capable of rising to the occasion and produce results with their traditional technology which is appropriate in every sense of the term Showing an engineering drawing to them is futile But show them a 3 dimensional model and they can replicate it in no time

The author has also become increasingly sceptical about the relevance of the formal education we are imparting to our prosthetists and orthotists Reared in large metropolitan towns, accustomed to good living, and even though capable of talking in English with a lot of technical jargon, they lack skills, dislike soiling their hands with manual work and acquire a value-system wherein they are often scornful towards our patients and mercenary in their outlook In short, they become whitecollar workers who would never willingly go to work in rural India

To be able to study the performances of the two groups i e the formally educated professionals versus the local artisans we have at Jaipur, developed two models of workshops in our own department One employs the formally educated diploma holders in Rehabilitation Engineering, using high-cost Western technology and the other is run by illiterate but highly skilled local artisans using a low cost appropriate technology We are convinced that utilizing appropriate technology, the output of work is more than double with less than half the investments the quality of products is superior and their patients are much more satisfied While

I would not like to raise something like the C P Snow-Leavis controversy, I think we have here another example of Two cultures' The author would opt for the more convivial culture provided by our traditional craftsmen rather than an alienated group who are becoming increasingly divorced from the mainstream of our rural population

Hurdles in flow of technology

Following the generation of appropriate technology at the micro-level in one institution, it then becomes essential to consider the problem of technology diffusion at a national micro-level to make the experiment socially meaningful We have been working at this problem and find that several difficulties save the way

1 Our own professional colleagues (in this case the orthopaedic surgeons) view with suspicion anything which appears to them to be unorthodox Unless a technology is imported from the West and is expensive, it does not acquire respectability That is why, even though field trials in over 5000 amputees and strict laboratory controls convinced us of the superiority of our limb, we had to wait till Western surgeons put their stamp of approval on our work before the local resistance could be overcome to some extent

2 Each profession zealously guards its own interests and creates a mystique so that its knowledge remains exclusive A process of demystification is frowned upon and I have been accused of introducing quackery by associating local artisans with, what is considered to be an exclusive professional domain

3 The author agrees entirely with Ivan Illich that we are confusing schooling with education These are different attributes One find the illiterate artisan limb maker analysing a limb in an amputee using the same kind of logic as the author would employ in clinical work and often his analysis is found superior to the authors own When a car is taken to an illiterate garage mechanic, he is again using the same kind of logic for fault finding How can we call him uneducated ? We have to rid ourselves of such conceptual mental blocks

4 In the bureaucratic framework of a Government hospital the artisan can never get justice in the matter of his salary structure The author has repeatedly seen a skilled craftsman who was earning over Rs 1000/- a month in the market being offered by the hospital the meagre salary of a helper just because he is a non-matriculate In a national programmee if we have to get our large reservoir of artisans to participate, new criteria for skill measurement shall have to be found out At Jaipur we could never draw these artisans in our work without outside assistance Thus we got from the local community and we worked out an interesting but very viable model of a joint participation of the surgeon the artisan and a voluntary organization, which not only makes up for the deficiencies of their salary structures but gives us more elbow room for innovations

Integrating rural artisans

If our profession sheds its prejudices and decides to accept appropriate technology, if we can utilize the enormous reservoir of native talent which is available in every town and village and if we can arrange to pay these artisans on a non-exploitative basis, it then becomes within the realm of possibility to provide rehabilitation aids to the neediest anywhere in the country Every village in our country has a cobbler, a carpenter and a blacksmith If this group can make agricultural tools, bullock carts or saddles for horses, why can't they make appliances for the handicapped ? What has a caliper for a polio patient in its design which is beyond the competence of a village artisan ? Of course as Professor Amulya Reddy emphasizes appropriate technology does not mean turning one's back on progress The latest scientific knowledge should go into the development of new innovations Appropriate technology is not necessarily primitive technology though there is nothing wrong in using traditional tools and materials and utilizing them for a superior biomechanical design But there is no justification for continuing to lean on the West for ideas import expensive technology and allow only a handful of formally trained professionals to work in this field

Using this strategy one can visualize the emergence of a network of larger workshops at major hospitals employing creative craftsmen where the more complex appliances cannot only be made but new appliances developed medium sized workshops at District Hospital level where standard simple appliances can be made available at a modest price and a one-man workshop at a Primary Health Centre level where a locally identified artisan can be provided with models of simple appliances such as splints for disability prevention He could also perform repair jobs on artificial limbs and calipers This work could be in addition to his original vocation enabling him to augment his income ICMR should seriously consider the idea of helping in the preparation of simple Instruction Manuals and models which could be utilized both by professional medical personnel as well as our local artisans for diffusion of this technology and support research schemes which help the development of the whole range rehabilitation aids which suit our people

Such a strategy would lead to the satisfaction of basic human needs, generate self-reliance, demystify medical knowledge encourage social participation and advance developmental objectives These after-all, are the objectives of appropriate technology

Thrust of science and technology in Seventh Plan

Yojana Correspondent

DURING THE SEVENTH PLAN the main efforts of science and technology will relate to taking up end-to-end technology missions establishing linkages between different sectors such as educational institutions research personnel institutions industry user beneficiary entities government planning decision making etc developing carefully selected thrust areas developing areas centres of excellence strengthening the science and technology elements in the education sector in order to increase productivity and efficiency and thereby employment opportunities enlarging the areas of application of science and technology to rural development and for sectors of society such as weaker sections women growing thereby employment opportunities existing infrastructure will be consolidated and modernised

Steps will be taken to integrate science and technology in the State sector Most of the developmental activity in the country is carried out by the State Union Territory governments The existing science and technology capabilities within the State Union Territory will be fully utilised Mechanism for analysing the State Plans defining the science and technology tasks arranging for their proper implementation will be set up in the State sector

Besides a determined effort will be made to integrate science and technology with other socio-economic sectors and to use it for improving quality of life However science and technology will not be treated as an isolated or compartmentalised activity

State S & T Councils State Departments of Science & Technology and Environment will be made to play a very important nodal role in close coordination with the State Planning Departments in ensuring an analysis of State Plans in the various important socio-economic sectors in terms of their S & T component in working out S & T programmes activities that derive from them and arranging for coordination of agencies that could implement these programmes in bringing about involvement of the large scientific expertise that exists with the States Union Territories in dissemination of information and popularisation of science

Agriculture

In the area of agriculture the efforts have been reasonably good, and it has been demonstrated that S & T can accelerate the development of agriculture During the post-Independence period, particularly over the past two decades highest priority was given to achieving self-sufficiency in food alternate strategies were examined, and it was agreed that massive application of S & T was essential It was also realised that trained manpower was crucial for manning science-based agriculture This called for higher as well as field level education Hence a reorganisation of agricultural research and education A number of agricultural universities all India coordinated projects etc were launched in addition to the setting up of a chain of ICAR laboratories Multi-disciplinary multi-institutional research was taken up with the thrust on complementing each others resources In spite of all this it is realised that there is still a gap between the actual potential and the results in the field, there are problems in the transfer of technology from the Centre to the State Departments

In the strategies for the Seventh Plan, therefore it is proposed to set up research centres in each of the agro-climatic zones and to carry out on farm adaptive trials, the approach would be decentralised agriculture planning through NARP centres Under the National Agricultural Research Project (NARP) centres have been set up which would provide S & T support Similarly the Krishi Vigyan Kendras can also be used as Central training centres and integrated with Farmers Training Institutes

Jhum cultivation has been an age-old problem, but solutions are available. Considerable work has been done in North Eastern region in Burnpur

Significant work on animal development has also recently started. The capabilities arising through work by the Centre will have to be much more utilised by the State Governments by [illegible] up close [illegible]

Irrigation

In the area of irrigation [illegible] put forth will include

State would give a [illegible] the [illegible] running organisations [illegible] collection scrutiny compilation and analysis of hydrological data for [illegible] of which many projects [illegible] Further this also would work as [illegible] data base on which water resources plans would be built up. For this organisation would be provided by the States by incorporating such proposals in the Science and Technology component in the Plan.

Similar action will have to be taken by the State for ground water resource data collection compilation and scrutiny analysis. States may have to [illegible] cases where ground water [illegible] strengthened and [illegible] under the S & T programme.

States would consider revamping their system of collection and compilation of irrigation statistics and statistical information pertaining to water resources development activities so that the data [illegible] the planning basis [illegible] This [illegible] to the S & T component of State plans.

Plan provisions

An appropriate percentage of the total [illegible] the respective sectors of development would be specifically provided as [illegible] for science and technology so that there is clear identification of the S & T component [illegible] This [illegible] may be earmarked and Planning Commission may ensure that this earmarked amount is not diverted to any other activity in that sector or to other sector.

The objective of the S & T [illegible] should not [illegible] be looked into from the short term aspect of 7th Plan formulation and objectives thereof. It also would provide for infrastructure and capability development for the long term requirement and objectives of all sectors of development activity. It is necessary that we get prepared today for the problems which we may have to face tomorrow or the day after.

Research

As a result of an effort made through the CBIP for the last 20 years research institutes for applied and basic research relating to river valley development planning are functioning. There is a system of coordinating this research through the auspices of CBIP. Although this system is working satisfactorily the States would carry out a review of their research organisations and strengthen them to ensure that they are self reliant and also provide adequate allocation for performing some basic research in addition to applied research from State finances. States will have to examine the problem of manning these organisations with personnel of high quality.

CBIP applied research programme would continue to form the activity of the Central sector. However States would also contribute to this programme by providing necessary allocations through their own sector of activities for carrying out applied and basic research and not depend only on Government of India's assistance [illegible] of direct use to them.

There is need to carry out research on all aspects of [illegible] including CAD programme. For this States would [illegible] look into the problems of [illegible] management including the [illegible] CAD programme. This could [illegible] S & T [illegible]

Government of India is also thinking of constituting a National Institute of [illegible] which will be [illegible] expert body to coordinate and assist the States [illegible] management problems.

[illegible]

There is need to create [illegible] of the States to apply [illegible] techniques to problems of the State so that [illegible] bility is progressively built up.

Environmental impact of irrigation [illegible] an integral part of all development projects [illegible] assessed. For new projects this would need to [illegible] assessed before the project is taken up. In addition States would create environmental cell/groups at State level to examine environmental impacts. Creation of such cells would be provided under the S & T programme.

In respect of over-exploitation of ground water specific case studies may have to be done by the States where such over-exploitation is taking place. They must also build up the technological capability to carry out these studies which may be provided in the S & T programme.

The case of States in the North Eastern region has to be considered separately and it would be considered whether research institutes required

the area can be set up under the [illegible] of the North Eastern Council

Manpower development

With the technological explosion that is taking place it is necessary for States to update technological expertise in their organisations. For this they would identify persons and training programmes for updating technological capabilities. Central Government is also making efforts to provide such programmes for technology updating. Some of them [illegible] the nature of training of the trainer.

For accelerating S&T development organisational arrangements at the State level would be looked into. It may be noted that [illegible] State [illegible] and [illegible] organisations in the States [illegible] about Rs 2.5 crore [illegible] outlay of Rs 6 crores in the Sixth Plan. The field workers [illegible] research [illegible] the common cadre [illegible] there is no [illegible]. The State Governments would [illegible] review their existing procedures [illegible] of highly qualified persons with [illegible] qualifications.

[illegible] would be made for the Flood Control Programme [illegible] the States of Bihar, UP, Assam and West Bengal. Special S&T [illegible] could [illegible].

Informatics

For development of S&T appropriate, adequate and timely information [illegible] 20 computers have been [illegible] to States [illegible] second minicomputers [illegible] It is necessary to work out the requirements of S&T information in the States [illegible] available. The States would make use of network of bibliographic information [illegible] NISSAT.

It would be useful that all the States could set up Centres where [illegible] of technology can take place.

S&T Councils are enabling nodal mechanisms. By themselves they cannot achieve much. S&T has to be built into the plans of agriculture, irrigation, health, construction and other [illegible] socio-economic sector. S&T Councils [illegible] for this.

Special activities by State S&T Councils

S&T Councils would establish a dialogue with specialists and experts in natural and social sciences as well as those concerned with programme implementation on what work has to be done and what sort of support would be needed.

One has to bring the problems face to face with the competence that could be used to solve them. For this there is need for new attitudes and approaches involving inter-actions among scientists, administrators and those concerned with finance. S&T Councils would make an effort to bring about the needed attitudinal changes and to sustain and nurture them.

One has to recognize the existence of large reservoirs of talents in all sectors and try to motivate these to ensure fullest utilization.

The importance of extension workers must be recognized in all sectors where large societal impact is involved, e.g. agriculture, health, environment, small scale industry, etc.

In the [illegible] institutions could undertake surveys, planning, [illegible] social sciences programmes etc. for this [illegible] support has to be provided. Research should [illegible] laboratory experiments in universities, national laboratories, etc.

Productivity is extremely important in all sectors. In the Approach to the 7th Plan special emphasis has been laid on productivity. S&T efforts would be specially directed to enhance productivity in the key sectors of agriculture, irrigation, energy, etc.

There is need to focus on sectors [illegible] building, information availability and dissemination, practical demonstration and extension and marketing.

Rural development

If S&T is to make an impact in the area of rural development, people's participation will have to be ensured. It would be useful if senior level scientists could take sabbaticals [illegible] villages for a period of six one year to understand the problems and to suggest solutions. The situation on the ground is quite different from that conceived of in the laboratories. One often encounters vested interests that resist change. Socio-economic factors and real needs have to be taken note of.

There are organizations at village level and many voluntary agencies which could be effectively and profitably dovetailed into the S&T efforts. Science and technology programmes would not be left just to the scientists alone for planning and implementation. Often the problems encountered is one of working out the acceptability and feasibility of various options.

Maintenance of handpumps is given as an illustration of a need and a solution related to local manpower trained appropriately. It is necessary to demystify technology and make it low cost and simple. Dissemination of information is very important.

There are significant resources available in the non-governmental sector. It would be useful to make a list of groups that exist in the various States, from out of which some could be selected on the basis of merit related to past performance, reputation etc.

(Continued on page 42)

How technology helps potters?

The application of technology to the potters wheel has modernised it with ball-bearings to be run by a fractional horse power motor This has increased the output of the potters considerably with a corresponding rise in their income This amalgamation of technology could be seen at Karukurichi (Tamil Nadu) under the aegis of Potters' Cooperative Cottage Industrial Society

THERE ARE 15 ENERGISED potters wheel in operation under the Society Each wheel is run by a 1|8 h p motor It can be operated at three different speeds The wheel is housed in a cube of the size 15×15×18 inches It can be used to shape upto 30 kgs of clay at one time Power consumption is just one unit for eight hours operation The number of pieces produced on the wheel varies from 150 to 60 a day of eight hours depending upon the size of the pieces Besides saving tedious human labour, the new wheel increases productivity by 25 per cent The Society's 15 wheels can give full employment to 30 persons a day In potters parlour it is known as the "Shila Wheel Each one costs about 2,000

The Society processes about 30 000 cartloads of clay every year Pots and pans apart the artisans of the Society make various other articles such as flower pots, spittoons, earthen stoves etc also Clay required by them is mined from the tanks in nearby Karisalpatty and Anapettankudu tanks The entire production is purchased by the Society and almost 95 per cent of it is sold in Kerala In 1983-84, production by members of the Society was to the tune of Rs 26 6 lakhs

The Society provides common workshed facilities to its 45 members In all the Society has nine sheds besides land for various purposes Management of the Society is vested with seven directors, elected from among its members A new tile making unit under the Society is expected to go into production in 1984-85

Average earning capacity of a working family of member-potter, consisting of a husband, wife and a child is around Rs 800 From this he has to spend for clay firewood and other raw materials

Financial aids

The District Rural Development Agency (DRDA) and the local branch of the State Bank of India have come out in a big way to help the potters of Karukurichi More than 30 members of the Society have been given loans by the State Bank with 33 per cent subsidy by the DRDA under the Integrated Rural Development Programme (IRDP) Potters children get training in their traditional art through the scheme for Training of Rural Youth for Self-Employment (TRYSEM) Stipends are available for training, on completion of which institutionalised and subsidised credit is available to the trained to start out on their own About Rs 50 lakhs have been distributed to some 4,000 rural artisans of the locality by the State Bank of India

The total value of village pottery produced in the country during 1983-84 came to about Rs 51 crore according to official estimates □

Institutional net work for technology

Here we present a peep into the frame of institutional net work for the development of science and technology in India together with a brief mention of sponsored researches under such institutions It gives an idea of the dimension, the depth and extensive nature of scientific research and technology development

THE TECHNOLOGY POLICY STATEMENT announced in January 1983, takes note of the complexity in the generation, acquisition and application of technology Aims and objectives, reaffirm Indian adherence to the path of self-reliance through strengthening its technology base and its application to areas of priorities, ensuring preservation of our environment and nurturing traditional skills These objectives can be achieved by proper mix of indigenous technology and acquisition from outside on a planned basis and through further intensifying our mechanism for generating technology, absorption, and diffusion and providing challenging opportunities for our young scientists and technologists

Committee on S & T

The Government of India constituted in March 1981, a Cabinet Committee on Science and Technology (CCST) headed by the Prime Minister The Committee reviews the overall progress of the science and technology programmes and takes decisions on high level policy matters, suggestes measures that are needed, major investments, etc A Science Advisory Committee to the Cabinet (SACC) has also been constituted as apex advisory body on science and technology. It is headed by Member (Science and Technology) in the Planning Commission and includes in its wide spectrum of scientists and technologists representing different areas of scientific endeavour The Committee is an advisory to the Cabinet and is serviced by DST The principal tasks of SACC are tendering advice on the formulation of science and technology policy of Government and the manner of its implementation, identifying and recommending measures to enhance the country's technological self-reliance

A National Biotechnology Board (NBTB) was set up in 1982 with the main objective of evolving a national coordinated short and long term plan of research and development, utilisation of known technologies, strengthening of existing infrastructure and setting up centres in the newly developed thrust areas of bio-technology Safety guidelines for conducting recombinant DNA research has been prepared

The National Science and Technology Entrepreneurship Development Board was also set up in January 1982, with the main objectives of dealing with the problem of unemployment and inappropriate employment among qualified science and technology personnel as also to ensure institutional single window mechanism at the central level for entrepreneurs

desirous of setting up of production ventures, to promote opportunities for gainful self-employment for them and to develop entrepreneurship

Science and Technology Department

The Department of Science and Technology (DST) which was set up in 1971 has been assigned the responsibility of promoting new areas of science and technology, undertaking or financially sponsoring scientific and technological surveys, research, design and development, supporting national research institutions and scientific bodies, coordinating all activities relating to international science and technology collaboration except in specific areas assigned to other agencies, dealing with the promotion of and support to indigenous technology, disseminating scientific and technological information, coordinating multi-institutional inter disciplinary activities in areas of science and technology and providing secretarial support to the Science Advisory Committee to the Cabinet

The main objectives of National Coordination of Testing and Calibration Facilities is to provide official recognition to competent testing laboratories to carry out particular tests related to science and technology, to the introduction of recognised calibration systems and raising the standard of testing the quality and reliability of Indian goods

The scheme of Natural Resources Data Management Systems envisages the development of methodologies, formats and computer software for creation of comprehensive data base for micro-level planning Standard formats for collection of data on natural resources and agro-economic socio-economic and demographic infrastructure have been developed which are under extensive field trials

Under the National Information System for Science and Technology (NISSAT), activities relating to the dissemination of scientific information have been accelerated In addition to strengthening the activities of the existing information centres on leather, drugs, machine tools and food, one more information centre for crystallography has been brought under its purview

A National Council for Science and Technology Communication (NCSTC) comprising representatives from Central and State governments, mass media voluntary agencies, etc, has been set up to prepare blue prints/action plans for popularisation of science and technology and work towards the growth of scientific temper in India

To encourage scientific activities at the State level, the scheme of providing assistance for development of State Councils for Science and Technology has gained further momentum Sixteen State Councils for Science and Technology and/or State Departments on Science and Technology have already been formed Other promotional scheme which have made considerable progress during the years are those relating to technology development for scheduled castes and scheduled tribes, science and technology for women and assistance to professional bodies.

The National Research Development Corporation (NRDC) and Central Electronics Ltd (CEL), are two public sector undertakings under the control of DST

The indigenously developed technologies are mostly licensed through NRDC The Corporation promotes the utilisation of such technologies through equity participation by providing financial support for development projects assisting in horizontal transfer of technology and support for export of indigenous technology CEL has made advances in photovoltaic systems regularly produced ; these are of high standards and have been installed in off shore platforms, communication work, remote mountain villages for water pumping and public lighting places where distributed electric power is not available A wide range of products in ceramics have been developed More or less all technologies/products have been developed in the undertaking indigenously

The Survey of India (SOI), Dehra Dun and the National Atlas Thematic and Mapping Organisation (NATMO), Calcutta are the two attached offices under the control of DST SOI and NATMO prepare maps of the country needed for survey support to defence forces and other purposes and also prepare a National Atlas of India SOI has undertaken several field and topographical surveys including surveys for developmental projects connected with coal fields, irrigation, power communication, flood control, water supply, forestry, etc

A number of autonomous scientific institutions in the country are fully or partially supported by DST through regular annual grants

The scientific aims and work of these institutions pertain to development of the national science and technology capabilities through accomplishment of time bound research projects of national laboratories These institutions are (1) The Birbal Sahni Institute of Lucknow, (2) The Bose Institute, Calcutta, (3) The Indian Association for Cultivation of Science, Calcutta, (4) The Maharashtra Association for the Cultivation of Science, Pune, (5) The Institute of Immunology, New Delhi, (6) Padmaja Naidu Hill Zoological Park, Darjeeling, (7) Ramar Research Institute, Bangalore, (8) Sri Chitra Tirunal Institute for Medical Science and Technology, Trivandrum, and (9) Wadia Institute of Himalayan Geology, Dehra Dun

Atomic energy

The Atomic Energy Commission, set up in 1948 is responsible for formulating the policy for al

atomic energy activities in the country The Department of Atomic Energy (DAE) set up in 1954, is the executive agency for implementing the atomic energy programme. This Department has a number of units under it

The Bhabha Atomic Research Centre (BARC) at Trombay, Bombay, started in 1957, is the largest single scientific establishment in the country At present two experimental nuclear reactors are in operation at Trombay—a one megawatt (mw) swimming pool type reactor APSARA and a 40 mw reactor CIRCUS

The Variable Energy Cyclotron Centre (VECC) set up at Calcutta by MARC is a national facility for carrying out advanced experimental research in nuclear sciences The High Altitude Research Laboratory of BARC at Gulmarg which provides facilities for high altitude research to all scientific institutions and universities in India BARC has a Nuclear Research Laboratory at Srinagar as well

The seismic station of BARC at Gauribidanur near Bangalore makes it possible to detect and determine the location of occurrence of underground nuclear explosions

The Reactor Research Centre (RRC) at Kalpakkam near Madras is primary for carrying out the research and development work needed to develop fast reactor technology A 15 mwe (maga Watt electrical) Fast Breeder Test Reactor (FBTR) is under construction at RRC

The Power Project Engineering Division (PPED) of DAE is responsible for the construction and operation of nuclear power stations PPED is operating two nuclear power stations namely 2×210 mwe Tarapur Atomic Power Station at Tarapur nearly 100 km north of Bombay and the 2X220 mwe Rajasthan Atomic Power Station at Rana Pratap Sagar near Kota Construction of the 2×235 mwe Madras Atomic Power Project at Kalpakkam near Madras is more or less completed The reactor of unit-1 of the Madras Atomic Power Station attained criticality on 2 July 1983 Another 2×235 mwe nuclear power station is at a fairly advanced stage of construction at Narora in the western part of Uttar Pradesh Construction of the fifth nuclear power station consisting of 2×235 mwe units at Kakrapar has been recently started

The Atomic Minerals Division (AMD) is one of the first units started by the ACE AMD with its headquarters at Hyderabad is responsible for prospecting and development work relating to uranium thorium, beryllium, niobium and tantalum The Indian Rare Earths Ltd (IRE), a Central Government company under the DAE, operates the mineral sands industry in Manavalakurichi and Chavara and the rare earths plant at Alwaye It also produces thorium products at Bombay IRE is setting up the Orissa Sands Complex (OSCOM) for enhancing rare earths production The Uranium Corporation of India Ltd (UCIL), another public sector undertaking under DAE, mines and processes uranium ore at Jaduguda in Bihar The Nuclear Fuel Complex (NFC) at Hyderabad fabricates nuclear fuel for the power reactors and also produces zirconium alloy products and stainless steel tubes NFC also produces certain special materials needed for electronics industry The Electronics Corporation of India Ltd (ECIL), the public sector undertaking set up by DAE at Hyderabad in order to exploit the expertise developed in BARC, manufactures electronics instruments and equipment for nuclear as well as non-nuclear uses ECIL also makes consumer electronics goods such as TV sets, calculating machines and computers

Another area in which India has developed expertise is the technology of underground nuclear explosions

A third research centre is planned at Indore primarily to develop advanced technologies such as fusion, laser and accelerator applications

Space research

The Indian space programme began in 1962 when the Indian National Committee for Space Research was formed in the Department of Atomic Energy of the Government of India In 1969, the Indian Space Research Organisation (ISRO) was created to plan, manage and execute the nation's growing activities in space science space technology and space applications

Government established the Space Commission in June 1972 backed by the Department of Space (DOS) and entrusted DOS with the responsibility for concluding India's space programme ISRO functions under DOS as its research and development organisation The Space Commission, the Department of Space and the Indian Space Research Organisation have their headquarters in Bangalore

The primary aims of the Indian space programme are the applications of space science and technology to further national developmental objectives in mass communication and education via satellite, the survey and management of natural resources through remote sensing technology from space platforms and the development of space technology with the maximum degree of self-reliance

The Indian Space Research Organisation (ISRO) is responsible for the planning, execution and management of space research activities and space applications programmes of the DOS The activities of ISRO are carried out at its four space centres namely, Vikram Sarabhai Space Centre (VSSC), Trivandrum

ISRO Satellite Centre (ISAC) and the Auxiliary Propulsion System Unit (APSU), Bangalore; SHAR Centre, Sriharikota, Andhra Pradesh; and Space Applications Centre (SAC), Ahmedabad.

The Physical Research Laboratory (PRL) in Ahmedabad, an institution supported mainly by the DOS, conducts research programmes in space and related sciences The National Remote Sensing Agency (NRSA) at Secunderabad utilises modern remote sensing techniques supporting the planning and management of the country's natural resources and provides operational support to various users

The SHAR Centre at Sriharikota Island in Andhra Pradesh, is being developed as a range for launching bigger satellite launch vehicles like ASLV and PSLV India's first satellite launch vehicle, SLV-3 was launched from the Centre

A comprehensive test facility for conducting various ground tests of rocket motors and sub-systems has been set up at Sriharikota This test facility is being augmented for the PSLV programme

Space Applications Centre (SAC), Ahmedabad is engaged in the planning and execution of the space application projects of ISRO Its objective is to apply space science and technology to practical uses To achieve this goal, SAC has taken up work in telecommunications and television broadcasting and reception via satellites, use of remote sensing techniques to survey natural and renewable earth resources, studies in space meteorology and satellite geodesy

Sponsored research

Various universities and academic institutions in the country are identified and encouraged by ISRO to undertake research and development studies in space science, space technology and space applications relevant to the Indian Space Programme

The Indian Middle Atmosphere Programme (IMAP) is a nationwide cooperative enterprise in scientific research to investigate the physical and chemical phenomena and processes taking place in the atmosphere between 10-100 km

The Department of Space, in close cooperation with the Ministries of Communications, Tourism and Civil Aviation and Information and Broadcasting, has taken up the establishment of the Indian National Satellite (INSAT) system The INSAT-1 system is an operational space system providing telecommunications, meteorology and television services from identical multipurpose satellites in geostationary orbit The proposed system envisages a very significant telecommunications component providing for long distance telephony, communication with remote areas and islands and emergency communications The meteorological capability includes 24-hour observation of weather system, data collection and relay from remote, unattended platforms and disaster warning. Television capability relates both to direct TV broadcasting from satellite to community TV sets in rural areas and to radio networking.

The Physical Research Laboratory (PRL), Ahmedabad conducts basic research in space sciences for undertaking the structure and dynamics research in space sciences for understanding the structure and dynamics of the earth's upper atmosphere, the solar terrestrial relationship, astrophysical problems, etc

The National Remote Sensing Agency (NRSA) carries out surveys of various natural resources, using remote sensing techniques Satellite imagery multi-spectral scanner data from aerial flying and aerial photography are made use of for such surveys The laboratory premises of NRSA are located at Hyderabad and the research flight facility with four aircraft (for high, medium and low altitude flying), fitted with various sensors, is located at Bangalore [

(Continued from page 37)

The Council for Advancement of Rural Technology (CART) has enumerated priority areas in consonance with the Technology Policy Statement of the Government of India

Social importance would be given to porgrammes relating to rural women and youth State Governments would identify specific areas of technology appropriate to rural areas in each State and interact closely with CART

Apart from demonstration and training, steps would be taken simultaneously to disseminate knowledge about acceptable rural technologies to manufacturers of machinery, tools, equipment and spare parts, so that large scale production of technically improved machinery could be carried out in the private, cooperative and public sectors, for this close coordination between State departments dealing with Rural Development, Science & Technology and Industries and CART would have to be ensured

There has to be a close working relationship between the DRDAs and DICs A district level committee on Science & Technology could be set up The instance of the Rural Technology Institute Gujarat which had set up 10 technology centres in 10 districts and proposed to have a technology centre in each district in the State is cited in this connection This institutional arrangement may be adopted by other State Governments, and this could be formulated as a regular plan scheme in the Seventh Plan with some quantum of Central assistance

The importance of public participation in the dissemination and adoption of technological innovations for rural development will be emphasized. [

How can technology help villages?

"TODAY villages need and demand the discoveries of science. It is of the utmost urgency that technology should reach the villages.

"Electricity makes it possible to shorten the distance between town and village. Power enables farming to move to a higher level of technology and become a remunerative industry. It can also mother a wide range of small industries based on agricultural produce, on the manufacture and upkeep of small tools."

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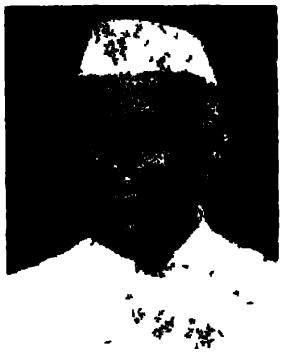
Where do the riches go ?

"It is a strange thing that in spite of more and more wealth being produced the poor have remained poor. They have made some little progress in certain countries but it is very little compared to the new wealth produced. We can easily see however to whom this wealth largely goes. It goes to those who usually being the managers or organisers see to it that they get the lion's share of everything good. And stranger still classes have grown up in society of people who do not even pretend to do any work and yet who take the lion's share of the work of others! And would you believe it!—these classes are honoured, and some foolish people imagine that it is degrading to have to work for one's living! Such is the topsy-turvy condition of our world. Is it surprising that the peasant in his field and the worker in his factory are poor although they produce the food and wealth of the world! We talk of freedom for our country but what will any freedom be worth unless it puts an end to this topsy-turvydom and gives to the man who does the work the fruits of his toil! Big fat books have been written on politics and the art of government on economics and how the nation's wealth should be distributed. Learned professors lecture on these subjects. But while people talk and discuss those who work suffer. Two hundred years ago a famous Frenchman Voltaire said of politicians and the like that they have discovered in their fine politics the art of causing those to die of hunger who cultivating the earth give the means of life to others."



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International food aid pessimism

Yojana

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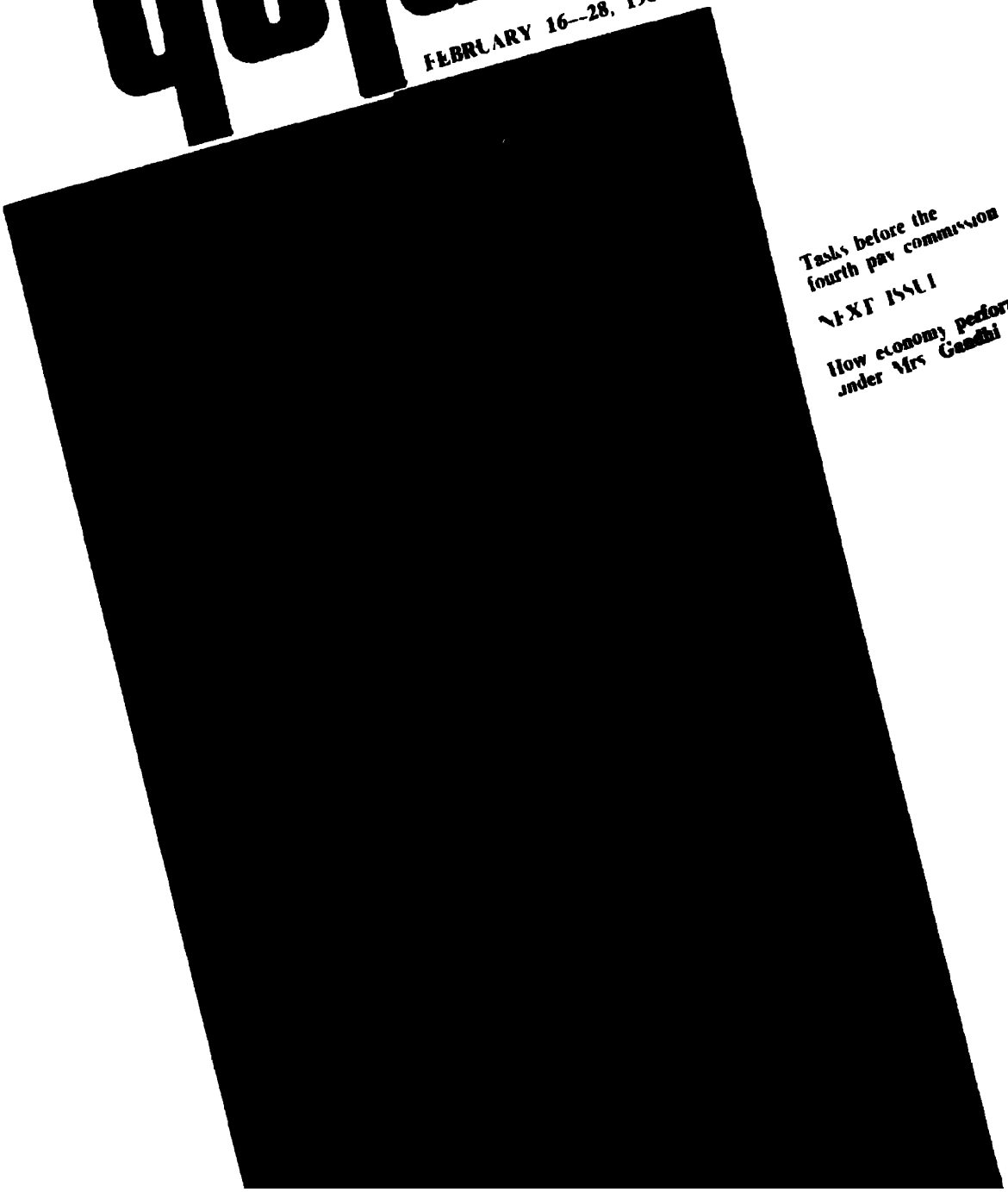

Tasks before the fourth pay commission

NEXT ISSUE

How economy performed under Mrs Gandhi

Soil conservation in 18 lakh hectares

SOIL CONSERVATION MEASURES through watershed management will be taken up in 18 lakh hectares area in the catchments of river valley projects as also flood-prone rivers during the Seventh Plan period at an estimated cost of Rs 648 crore While 10 lakh hectares will be in the catchments of river valley projects 8 lakh hectares represent the catchments of flood-prone rivers

The scheme of soil conservation in the catchments of river valley projects has been in operation since the Third Five-Year Plan and presently work is in progress in 724 priority watersheds in 28 catchments spread over 17 States one Union Territory and the Damodar Valley area By the end of the current financial year work is likely to be completed in 178 watersheds Again 14 watersheds have been transferred in the scheme of integrated watershed management in the catchments of flood-prone rivers Thus work on 532 watersheds will be on-going in the Seventh Plan

This programme is being implemented with 100 per cent Central assistance 50 per cent as grant and 50 per cent is loan advanced to the respective State Governments Till 1983-84 an area of 18 37 lakh hectares had been treated at a cost of Rs 160 crore This year an area of 1 04 lakh hectares will be treated at an estimated expenditure of Rs 19 9 crore

The Centrally sponsored scheme of Integrated Watershed Management in the catchments of flood prone rivers of the Gangetic basin was launched during the Sixth Plan on the recommendation of the Working Group on Integrated Action Plan for Flood Plains in the Indo-Gangetic Basin appointed by the Union Ministry of Agriculture in 8 catchments lying in the States of Uttar Pradesh West Bengal Himachal Pradesh Haryana Rajasthan Bihar Madhya Pradesh besides the Union Territory of Delhi Through this scheme, 1003 lakh hectares of land had been treated by the end of 1983-84 at a cost of Rs 18 13 crore During the current year, it is expected that 55 000 hectares of land would be treated at an estimated expenditure of Rs 12 crore

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Employment programmes need proper direction

Madhukar Gupta

Stating that there is no discernible pattern or direction in the asset creation process of various employment and public works programmes, the author says one cannot help concluding that there is a high degree of ad-hocism, and in some cases a nagging persistence of the "test works" spirit He suggests a policy perspective for making programmes viable if poverty is to be eliminated, and makes a strong case for merger of the National Rural Employment Programme and Rural Landless Employment Guarantee Programme in the Seventh Plan and beyond

A SUBSTANTIAL REDUCTION in poverty and unemployment/underemployment has been stated goal of successive Plans The Sixth Plan aims to bring down the population below the poverty line, from 51 per cent in 1979-80 to 30 per cent by 1984-85 and to less than 10 per cent within the 15 years perspective ending 1994-95 Apart from normal sectoral plans, several special programmes were started in the Sixth Plan to achieve this objective The most significant of these were the Integrated Rural Development Programme (IRDP) which aims at the endowment of productive assets to identified households from the poverty group, and National Rural Employment Programme (NREP), which aims to create additional wage employment opportunities for the rural poor through public works aimed at creating durable assets in the rural area: Midway through the plan, it was felt that the hard-cor or rural poverty comprising the rural landless had t be approached more directly, particularly in terms c creation of additional opportunities of gainful employ ment This led to the launching of the Rural Landles Employment Guarantee Programme (RLEGP) aime at providing 100 days employment in a year to atleas one member of each landless rural household I woul be dealing in this paper with the programmes aime at creating employment through public works, whic were started in Sixth Plan

Review of past experience

Before we look into the performance of these em ployment programmes, a look at the historical pers pective and past experience is essential

There was a fairly early realisation of the fac that actual results did not validate the assumption tha growth will lead to substantial absorption of growin labour force Various special schemes of employmer generation were, therefore, taken up from time to time

The Rural Manpower Programme (RMP) was take up towards the end of 1960-61 and covered 100 Community Development Blocks by the end c 1964-65 This was aimed to provide employment fc 100 days to at least 2 5 million persons by the la year of the Third Plan. However, due to resource constraints, only a little over 20 per cent of the outla of Rs 150 crores, originally envisaged, could be pro vided and the programme came to end in 1968-69.

This was followed by the Crash Scheme for Rura Employment (CSRE) which was launched in 1971 fc a period of 3 years, with an annual outlay of Rs. 5(crores. This Programme aimed to create employmer

pportunities for 1000 persons per annum in each of he then existing 350 districts in the country Although, n the matter of mandays of employment generated the argets were exceeded (actual employment generation as 3158 92 lakhs mandays as against a requirement f 3150 lakh mandays even @ 300 days per person ach year), but in fact the benefits both in terms of irect employment and asset creation were found to e too widely scattered, with considerable lack of lanning and durability in the case of the latter

In view of this experience, it was felt that a more oncerted effort was needed to ensure that such chemes could have a discernible impact on the un- mployment situation in the country Alongwith the SRE, a Pilot Intensive Rural Employment Programme PIREP) was, therefore, started in November 1972, or a 3-year period, in 15 selected CD blocks The bjectives of this were the provision of additional mployment opportunities for unskilled labour, creation f assets, preferably those, which would have a multi- lier effect on creation of new job opportunities of a ontinuing nature; creation of new skills through project ork on site, and, more importantly, to attempt some ind of manpower budgeting with respect to wage- eeking labour with a view to ultimately evolving a omprehensive programme for the rest of the country committee, set up in October, 1974, to review its mplementation, expressed the view that the entire evelopment strategy should be based on labour inten- ive technologies, as an integral part of the regular evelopment process, leaving a small backlog of un- mployment to be tackled through special employment rojects.

Three years later, in the backdrop of comfortable ood stocks of 15 4 million tonnes, the "Food For Work Programme" (FFWP) was taken up from April 1977 with the three fold objective of utilisation of vailable surplus foodgrains for human resources evelopment, generation of additional gainful employ- ent in the rural areas to improve their income and utritional level and, strengthening of rural infrastruc- ure. The last of these came about as a modification f the initial aim of using the food resources for main- nance of public works, on which large investments ad been made in the past, and finally included all ems of works, Plan and non-Plan, provided they were the nature of durable community assets

A total employment of 9793 22 lakh mandays was enerated under this Programme in the three years om 1977-78 to 1979-80, and a wide variety of assets ere created. During 1979-80 when the country was ced with a severe drought, this programme became ry popular and came to be recognised as a major strument of rural employment and development An valuation of the Programme by the Programme Eva- ation Organisation of the Planning Commission PEO), however, brought out some major weaknesses hich eventually led to a restructuring of the pro- amme in the form of the National Rural Employment Programme (NREP) which was launched on October 2, 1980, and became a regular Plan Programme from April 1981 In addition some States like Maharashtra, Kerala, Gujarat and Tripura have their own Programmes the most notable of which is the Employment Guarantee Scheme (EGS) in Maharashtra.

Some important issues that emerge from the experience of the past programme are examined below.

1 Experience under all the past programmes suggests that the benefits, were very thinly spread and, the impact in terms of overall unemployment/under-employment was not substantial. The average period of employment per family in the case of the FFWP was found to be only 44 days in an evaluation study of the PEO (1980) This becomes more relevant if read with the findings of an evaluation study in respect of the Employment Guarantee Scheme (EGS) of Maharashtra that in many instances there was participation of as many as 3-4 members from single families, thus bringing down the per capita employment period even further It would not be unreasonable to assume a similar trend in other similar programmes.

2 The evaluation study of the EGS Maharashtra has also brought out that there was a higher participation of the non-target group than the target group. Landless labourers accounted for only 22 per cent of the beneficiaries as against 78 per cent for cultivators from the target and non-target groups. The major reason for this appears to arise from the difference in the nature of employment requirement of the two categories viz. longer periods in the case of the former and seasonal in the case of the latter The seasonal nature of works under EGS, uncertainty in respect of duration of the works, and delays in payment appear to have worked against higher participation of land-less labourers At the same time it was found that, for those landless persons who get employment under the scheme, it was of great significance to their needs. The important point is that even in terms of direct employment effects the redistributive element of the programmes has been limited

Although each successive programme generally aimed at the creation of community assets, this was mostly found to have been done in an unplanned and haphazard manner A concrete example is that of rural roads. 72,375 kms, under CSRE, 2,03,084 kms. under FFWP, and 3,91,297 under NREP (till 1983-84) is total of over 6 lakhs kilometres of roads have been constructed under special employment programme in just over a decade By the financial criteria of an average of 2 5 kms. of road length per village adopted by the Task Force on Projections of Minimum Needs & Effective Consumption Demand, set up by the Planning Commission (1979), the achievements under CSRE and FFWP alone should have led to connecting about 1.1 lakh villages in the country In absolute terms only 2 45 lakh villages actually had road connections of any kind till 1980 Obviously, the impact of the Special Employment Programmes had been only

peripheral. In this context, it is relevant to note the observations of the Public Accounts Committee that more than 50 per cent of the assets created under the FFWP were not durable and there was no information available as to the value of such assets and the expenditure requirements to make them durable.

In the PIREP which was meant to evolve an employment strategy for replication, the need for taking up projects having a multiplier effect for creation of new job opportunities was stressed. In the absence of studies indicating output-employment effects of special employment works, it is difficult to say anything definite about the actual position on this score, but experience so far appears to suggest that this aspect has not received adequate attention.

The most important lesson that comes out from past experience is that but for the RMP (1960—1969) and the NREP all other programmes tended to function on an ad hoc basis, and even the RMP, because of resource constraints, was reduced to a similar position. Not surprisingly, therefore, clarity of objectives and strategic content were generally missing. In this context the observations of the Committee that reviewed the PIREP that the whole strategy should be based on creative labour absorption through production activities based on labour intensive technology, leaving only a small backlog to be tackled through by special employment schemes, becomes particularly relevant. This highlights the sustenance nature of such schemes as distinguished from the provision of self sustaining income generating capacity such as that which could be gained from the endowment of productive assets. As a corollary to this, it also means that in perspective special employment programmes should be conceived with the aim of being tapered off at some targetted point of time. Such target dates would naturally relate to the perspective as conceived in asset endowment and basic need programmes, coupled with overall growth projections.

Need for special employment programmes

With vast numbers of people suffering from unemployment and, more than that, from gross underemployment, the need for special employment programmes as a measure of providing supplemental income is obvious in the present condition of the rural economy. But, lessons from past experience would tend to support the proposition that as a part of long term strategy, such programmes should be aimed at a particular strata of people or sub-group within the larger poverty group. This strata would, by and large, consist of the poorest amongst the poor i.e. those who are totally assetless with low labour mobility, who, even if provided with productive assets, would take both time and supplemental assistance to reach a level of self sustenance through productive use of the assets. This should be the core target group for the Programme.

The only way such a target approach can be meaningfully operationalised is by bringing in the concept of Guarantee related to a fixed period of employment ranging from 90—120 days a year for atleast one person from each target household, which will now have to be seriously considered in the Seventh Plan. If necessitated by resource constraints, the seasonal employment requirements of small cultivators would have to be met from normal ongoing works and by increasing the productivity and labour intensity of their land holdings with or without supplementary asset endowment. We will see later that even this can be done to some extent, through the special employment programmes. For purposes of strategic planning it is clear that special employment programmes should be closely integrated with and, in fact, should be viewed as part of a total anti-poverty package having definite and distinct approaches towards different classes of the poor. Considering the dimensions of poverty, a necessary concommitant of this would also be that such programmes, with the required directional emphasis as stated above, would, perhaps, have to be an integral part of the Plan for atleast the common two-three decades or so. This must be clearly recognised at the outset to enable long range planning for asset creation, creating the necessary organisational structures, and avoid taking up ad hoc employment schemes separately in different areas.

This has to an extent been achieved by bringing the NREP squarely into the Plan and is thus re-inforced by the professed intention of continuing it in the Seventh Plan.

Review of the national rural employment programme (NREP)

The progress of NREP in terms of provision and utilisation of funds and employment generated so far is given in table below:

Year	(Rs in crores) Releases during the year	Total available resources (including carry over balances)	(in million mandays) Utilisation	Employment Generated
1980-81	316 38	346 32	217 53	413 58
1981-82	331 08	461 87	319 48	354 57
1982-83	399 23	541 63	378 20	350 10
1983-84	400 00	513 49	390 06	392 68
1984-85	460 00*			

*Allocation for 1984-85.

Employment generation

For reasons stemming largely from the continuous increase in wage levels and rising material costs, the employment in absolute terms has continued to come down. However, the targets set for the creation of additional employment opportunities have been consistently achieved. It is, however, significant that data regarding the number and category of persons, and/or households to whom employment was provided is not available. Hence, the overall impact of the programme

cannot be spelt out This is a major data gap, which will now have to be filled through the target group approach as indicated earlier coupled with appropriate identification and monitoring mechanisms

Nutritional and living standard of the poor

The objectives pertaining to improvement in nutrition and living standard of the poor are sought to be achieved, through part payment of wages in the form of foodgrains, and of course, by increasing the purchasing power of the workers through supplementary income resulting from direct employment

(a) The performance in respect of distribution of foodgrains has not been very satisfactory Against a stipulation of giving atleast 1 kg of foodgrains per day the average achieved in 1983-84 was only 0 49 kg, with only two States and one Union Territory viz Orissa, Tripura and Lakshadweep having achieved the desired level During 1983-84 a significant step was taken by providing substantial subsidies on the issue price of foodgrains to be distributed under the Programme Apart from increasing the total money value of the wages to the extent of the subsidy, this step created a direction towards the poverty group and an element of redistribution in the Public Distribution System, which under the main system had consistently eluded operationalisation also Unfortunately, even the provision of subsidy has not led to any improvement in the level of foodgrain distribution under the Programme But for a few cases where lower market prices (in season) may be responsible for this, the major bottleneck appears to lie in administrative weaknesses It is essential that this issue is faced squarely and a time bound action programme is made by each State Government to be able to come up fully to the stipulated level

(b) Some States, such as Tripura, have also been distributing other items such as Saris in their own special employment programmes In view of the fact that clothing forms a basic requirement and so far figures only marginally in the Public Distribution System it may be worthwhile to incorporate this in the NREP For supplies of the clothing items a tie-up with the handloom sector could be made which would benefit the poorer people in that sector also by providing them with a ready market

(c) As regards supplementing the income of the workers through direct employment it is not possible to comment on the actual position obtaining in this regard because no account is available of the quantum of employment provided to different workers, since monitoring so far comprehends employment generation in gross manday terms only It is important here to note that the goals of the programme as a part of the beneficiary oriented anti-poverty package would be achieved only if a reasonable period of employment is ensured for each worker As already mentioned at present there is a vital data gap in this respect

(d) Another important aspect of the programme in terms of its employment/income generating effects relates to stabilisation of wages, which is sought to be ensured through payment of minimum wages under the Programme After an almost disastrous start in this regard the position has improved substantially by 1983-84 in almost all States However, considering that the wage element also includes skilled wages, which would, particularly in building works, constitute a substantial part of the total wage cost, the position of actual level of unskilled wages is still not clear The reported figures of total wage costs which in a number of States approximate to the minimum wage level in manday terms would therefore, indicate that the actual unskilled wages are still below the prevalent minimum wage levels in almost all the States In this backgdound it would be worthwhile to review the entire question of whether skilled wages should be deemed to be a part of the wage component or of the material component The important point in this regard would be that the Programme aims to provide employment opportunities to the poor, and presumably unskilled workers In any case a disaggregated account of skilled and unskilled wages paid could be usefully kept

Asset creation

The following table shows the yearwise picture of asset created under the Programme

	1980-81	1981-82	1982-83	1983-84
Social Forestry	54567	103319	100984	94268
Soil Conservation (ha)	228130	136971	37823	74986
Works benefiting Sc's Sts (Nos)		90423	158970	80344
School & Others Buildings (Nos)	16001	21302	75402	21530
Tanks	NR	13709	15997	11628
Roads (Kms)	166463	73010	104448	48293
Irrigation & Flood control (ha)	385144	105641	166408	307111
Others	141539	7276	15683	12113

It would be seen that till 1982-83 works such as social forestry, soil conservation and minor irrigation had a progressively decreasing coverage while there was a sharp increase in building and road works Part of the reason for this appears to be in the fact that for the first six months of 1980-81, the Food for Work Programme was still in operation which had no provision for expenditure on materials, and per force, the emphasis was on labour intensive earth-work type of projects With the launching of the NREP, and the accompanying emphasis on the need to ensure durability of the assets created a provision allowing for expenditure on materials was made with a stipulated wage material costs ratio of 40 60 (revised to 50 50 in 1983-84) In this background the trend would appear to be a welcome one, as it indicates a move towards building up durable assets and moving away from the "test relief works" spirit which albiet a hangover from the Famine Code of Yesteryears, appears to have dominated the Special Public Works scene over the last two decades The sharp decline, in quantum terms, in almost each category of assets (particularly material intensive assets) created under

the Programme in 1983 84 in spite of a higher total investment would seem to re-inforce the proposition However, in the absence of classified categorywise expenditure figures for different assets, it is difficult to say anything conclusively on the subject Reviews made by the Ministry of Rural Development and a closer analysis of some of the figures bring out the following pertinent issues

(a) Although the national average of wage material cost in 1983-84 was about 62 38 (re very near the pre 1983-84 stipulated level of 60 40) in disaggregated terms the variance in different States has ranged from 42 to 87 per cent in the case of wage costs and from 13 to 58 per cent in the case of material costs In a number of States there is still a predominant labour cost element even though the type of works taken up could be called material intensive

(b) The following chart shows the position of total expenditure and actual asset creation in some selected States in 1983-84

Category of Asset	Andhra Pradesh	Maha rashtra	Tamil Nadu	U P	West Bengal
1 Total Expenditure	3719 66	2903 77	4008 16	6895 90	2544 08
2 Social Forestry (a) Areas (ha)	6358	2474	11159	13016	2992
(b) Trees planted (lakhs)	620 39	45 78	72 49	411 84	6 26
3 Works benefiting SC ST (Nos)	46038	[illegible]	2029	[illegible]	3263
4 Tanks (Nos)	102	14	2422	84	2912
5 M I & Flood Protection Unit (Ha)	4670	1	2946	473	9157
6 Soil Conservation (Ha)	55		14	7763	60395
7 Drinking Water Wells (Nos)	299	94	1777	[illegible]	17923
8 Rural Roads (Kms)	3877	377	9157	2421	16757
9 School Bldgs Panchayat Ghars	4440	435	1275	79	1273
10 Other Works (Nos)	844	268	2478	365	3367

While it may be said that cost norms would vary for different activities in different States, the extremely wide variance in the investment-output relationship in different States cannot be explained only by this—in West Bengal a substantially larger number of assets have been created in almost every category as compared to Uttar Pradesh with a comparative investment level of only 37 per cent

(c) Asset creation also does not appear to have been linked to any well defined priorities either in terms of the Minimum Needs Programme or the productive requirements of agriculture and allied activities The following table gives data regarding a few selected States (the selected States have 40 per cent of the total villages in the country) in respect of roads (roads have been chosen because apart from being a vital component of rural infrastructure and of the Minimum Needs Programme, they have had a predominant place within the NREP also)

Table

	Bihar	Orissa	U P
1 Road Kilometerage constructed improved under NREP (1980 84) (in Kms)	14917	46980	75092
2 No of villages (a) as per MNP criteria*	15414	7380	22285
(b) Others	52152	47266	90266
(c) Total	67566	54646	112551
3 No of villages connected with roads as on 1 4 80 (a)	7220	517	8583
(b)	10614		NA
(c)	18034		
4 Target for Sixth Plan as per MNP	3571	2780	4057
5 Likely achievement	2485	1130	2477
	(1361	(1650)	(1580)

It would be seen that in all these States a substantial numbers of villages (even as per the limited MNP criterion—villages having a population of 1000 and above) remain to be connected and there are likely to be shortfalls in terms of Sixth Plan targets These would be substantial in the case of U P and Orissa On the other hand almost 75000 and 47000 kms of roads are reported to have been constructed under the NREP alone in the two States By the criteria of road length per village referred to earlier this could have meant road connections for 3000 and 18800 villages respectively which has either not happened or has not been taken note of This appears to have been caused partly due to the fact that roads under the Programme seem to include all kinds of works like paving of village streets inter basti road within villages and link roads as per MNP norms In the totality however the lack of prioritisation and planning is evident In such a situation it cannot also be guaranteed that all works would be durable Moreover the long-term and even direct employment implications of small isolated works would at best be limited

Social forestry

Reviews show a similar situation in respect of social forestry In addition to road side plantations, which have been popular every-where the works in some States were found to include the growing of nurseries for distribution of saplings to all farmers, big and small and in others small village lots etc without any adherence to cost and physical norms Apart from an attempt to substitute funds this indicates a situation in which there may not be much potential for long term income or employment effects, particularly for the target group apart from the fact that in the process, the concept of social forestry itself has tended to get relegated to a level of marginal relevance

The growing propensity to take up all kinds of building works shows the need for having work-sites

near the villages, local pulls and pressures to a wider coverage of villages and panchayats (these two can be said to reflect the economics and the politics of the programme), and, the preference of local Planners arising from easier implementability of such works than, for example, of water-shed based land development works In the process, however, material costs are high with higher subsequent maintenance requirements, durability of the assets is suspect, and both the direct and long-term employment effects are extremely limited

All in all, the above review would show that there is no discernible pattern or even direction in the asset creation process and one cannot help concluding that there is a high decree of ahoism, and in some cases a nagging persistence of the test works spirit

Directions for the future

The question would then arise how and what direction can and should be given to the Programme? In a sense the problem can be said to lie in the multiple objectives and sub-objectives of the Programme themselves

(a) Undeniably, the first and the major objective is to create additional employment opportunities On the face of it this would naturally point to labour intensity being given a pride of place in the project selection process An important aspect of this, however, should be the long-term and sustained employment potential of the projects It would bear repetition that immediate direct employment is essentially in the nature of relief and the permanent value of the Programme would lie in strengthening the employment potential of the economy as a whole This would point to the need to take up works of a productive nature

(b) Productive Programme with long-term income generating potential, would by their very nature relate to the development and increasing the productive capacity of existing assets e g land development minor irrigation and even roads which help to market the local produce Considering the skewed pattern of asset holding in the rural areas such projects would tend to favour those who are already better off On the other hand increased agricultural productivity and intensity would lead to greater labour absorption We are thus faced with another apparent conflict

(c) The objective which seeks to create durable community assets would automatically point towards a higher component of durable road works building works etc which would have a predominantly social value In a number of cases in this category of works the higher material and skilled labour requirements would substantially erode the direct employment generation potential of the outlays in terms of mandays per annum In the case of buildings, apart from the very low direct unskilled labour requirement, the long term income and employment effects would be at best very marginal

(d) The provision for using upto 10 per cent of the allocations on works of direct and even individual benefit to members of the Scheduled Castes, could easily be in the nature of assets endowed (e g house-sites and constructed houses), but their direct employment potential for the community as such would be very limited The same would be the situation where land development works on private lands is undertaken, unless by some legislation, etc, large chunks of such lands can be compulsorily taken up for development at the instance of Government for land development, soil conservation etc with provision for payments of costs by the landholders, at least the larger ones

It would be seen that a number of parallel and often conflicting issues are involved in different project typologies

Careful thought would have to be given, in this background, to define the immediate and strategic objectives of the Programme with greater clarity, and to devise a programme content aimed to achieve these objectives It appears that in concretising the objectives and defining and prioritising the kind of projects that ought to be taken up, the following factors would have to be given due emphasis (a) labour intensity and amenability of the projects to provide a reasonably long spell of employment in the process of implementation, (b) direction towards the poor (c) productivity and long-term income and employment generation potential (d) creation of a base for asset endowment programmes aimed at the poor, (e) capacity to fill up gaps in vital infrastructure components in the rural areas (f) potential for generation of income for the community wherever possible, and (g) making the rich pay for benefits accruing to them through such programmes

Suggested programme objectives

If we are willing to go along with the foregoing review and analysis the objectives of the NREP or any other Special Public Works Programmes could be redefined as follows

(i) generation of additional employment opportunities so as to provide 90—120 days employment every year to at least one member from each rural landless household*,

(ii) creation of durable productive assets aimed to provide direct benefit to members of the poverty group comprising Scheduled Castes/ Scheduled Tribes rural landless agriculture labour households and small and marginal farmers, creation of economic rural infrastructure, and augmenting local resources through selected community assets,

(iii) improvement of nutritional status and levels of living of the poor through increased supplementary income and provision of foodgrains and other essential commodities to the beneficiaries and

(iv) stabilisation of wages in the rural areas

* Quantified objectives for average block-wise total employment generation could be attempted on the basis of rough demographic estimations

Some subsidiary objectives would also need mention in the guidelines Prima-facie these could include skill formation, reliance on use of local materials and resources, promotion of labour intensive technologies, income redistribution in favour of the rural poor, stimulation of local popular participation and organisation of the rural poor through cooperatives and other organisations and associations

Suggested programme content

Some possibilities and priorities for the type of works that should be taken up under the programme in the background of the foregoing review and suggested objectives are given below

1 Wherever there is cultivatable waste land and other kinds of marginal lands, it should be taken up for development and in the process employment should also be provided to actual or potential allottees beneficiaries of such lands Scattered small and marginal holdings could also be consolidated and so developed In all such cases no financial liability would be created for the beneficiaries

2 Publicly owned derilict tanks could be renovated on a la ge scale and turned over to target group workers for pisciculture on a cooperative basis

3 Social forestry works should be taken up in the form of fuel wood lots energy plantations and common pastures or fodder plantations These could be leased out to poor beneficiary groups who may be landless and help to save fuel costs in the houshold and sustain animal assets For roadside platations also, arrangements for caring and maintenance in manageable stretches on the basis of wage payment coupled with hutment facilities and the right to collect the produce could be conceived as is probably being done in some planes in Madhya Pradesh

4 Composite homestead projects for the landless in the form of a house, and a small plot to be planted or developed for vegetable cultivation, etc could be considered Past efforts at development of elaborate colonies located outside, or on the fringes of villages have often met with failure and abandonment, because these sites, apart from being isolated, do not bear any relation to the worksites of the concerned households The lesson to be learnt is that homestead development must be composite irrespective of whether the work sought to be created is land based, animal based or based on other assets Each such composite project could then easily become a production estate Such composite schemes could have provisions for drinking water wells community latrines bio-gas plants etc

5 On farm works, which could comprise farm ponds, wells and field channels on individual holdings of members of the Scheduled Castes and even small and marginal farmers, and development of selected watersheds predominantly inhabited by small and marginal farmers, should be specifically considered In respect of small farmers this could be linked with a precondition that asset endowment programmes aimed at them should not be subsidy based any longer but should have thrust on the technological and extension inputs with an element of subsidisation as an incentive for promotion of new technologies and agronomic practices

6 In identified micro-watersheds and commands of larger irrigation projects field works could be taken up with the specific condition that recoveries at stipulated rates would be made from non-target group beneficiaries Such recoveries should go into a local fund to be maintained at the district level to augment resources for maintenance of community assets

7 Mention has been made earlier of roads These should be allowed within a certain ceiling and subject to strict adherence to the MNP criteria and the intense priorities arising therefrom

8 Beyond this if building works have to be taken up, they should be in the form of buildings for banks, godowns for storage of inputs etc , shops and workshedsfor target group beneficiaries, market yards in areas with concentration of population of weaker sections etc These should be provided within a framework of integrated spatial planning Among other things such works should be aimed at raising resources locally, through rents market fees etc so as to add to the overall resource availability for maintenance at the local level

9 Works of a purely social community nature such as school buildings Panchayat Ghars etc, though important terms of the totality of development needs must necessarily get a relatively low priority in terms of the mix of goals expected of the Special Employment Public Works Programmes

Some methodological issues

The suggested redefinition of objectives and programme content are intended to make Special Employment Programme an integral part of the anti-poverty package instead of viewing them as pure Public Works Programmes per se This would imply a target group, target areas where there is a concentration of target group population and a substantial redistributive effect

To an extent this bias has already been provided through the Rural Landless Employment Guarantee Programme which was launched in 1983-84 In practice however except for the procedural aspects of project preparation and approval by a Central Committee in the Ministry of Rural Development (these are of course, significant in themselves), there has not been

much change in the overall approach The following issues would now have to be considered seriously and in earnestness, so as to provide the nuts and bolts, as it were, for concretising the strategic objectives as stated earlier

1 In terms of employment, these Programmes can at best be viewed as supplemental in nature, and it would be futile to expect them to lead directly to poverty eradication It would be logical that such supplementation should be in terms of those, who are considered the poorest, or in other words those who are the focus of attention under the Integrated Rural Development Programme This convergence in the beneficiary clientale of the two programmes would have to be brought about

2 This would not be possible without developing institutional mechanisms for registration and identification at the block level Such mechanisms would in fact become the instruments for measuring employment needs and the extent of unemployment/underemployment in the rural areas The significance of this has to be seen in the context of the yawning gaps between daily unemployment estimates which stood at 20 74 million persons and the estimates by which 339 million persons were said to be living below the poverty line, in 1980

3 To provide guided wage employment as suggested, the projects would also have to be chosen carefully The tendency to take up small and spread out projects, on a panchayat/village wise basis may have to be eschewed To this extent, the concept of felt preferences of the local community would have to be reoriented without, of course in any way compromising on the need for community involvement and popular participation

4 Wherever possible detailed sectoral Master Plan would have to be prepared so as to enable careful prioritisation in the process of capital formation

5 The redistributive effects of the Programme would come about through (a) distribution of subsidised foodgrains, (b) direction of works towards the poor, and (c) recoveries of costs from the non-target group beneficiaries of the Programmes The last of these should not however be limited to the recovery of proportionate State investment used to develop their assets, but should also cover the benefits that the development of rural infrastructure through the Programme would bring, predominantly to those who are better off Appropriate cesses, betterment levies, etc to be used for financing part of the investment and maintenance costs would appear to be the best way to bring about what may be called, a genuine participation of all, in terms of their needs, benefits received and capacity to pay

To conclude if conceptualisation of Special Employment and Public Work Programes called by whatever name, is to be done on the lines suggested, that it would be logically inconsistent to retain different but parallel nomenclatures and programmes In short, there is a strong case for merger of the National Rural Employment Programme and the Rural Landless Employment Guarantee Programme in the Seventh Plan and beyond. □

Record production of potato during 1983-84

THE ALL INDIA PRODUCTION of potato reached an all time high of 12 25 million tonnes during 1983-84, surpassing the 1982-83 production level by 23 per cent It also surpassed the previous peak of 10 13 million tonnes achieved during 1978-79 by 21 per cent India is currently the fifth largest producer of potato in the world During 1970-71 India's rank among potato producing countries was tenth

There have been notable increases in the production of potato since the inception of planning in 1951-52 and more particularly since 1970-71 This would be evident from the fact that the all India production of potato, which was only 1 66 million tonnes in 1950-51, increased to 2 72 million tonnes in 1960-61, 4 81 million tonnes in 1970-71, 10 13 million tonnes in 1978-79 and 12 25 million tonnes in 1983-84

Housing shortage in India

THE HOUSING SHORTAGE in India is estimated to be of the order of 23 8 million in 1984 Out of this 18 1 million shortage is in rural areas and 5 7 million in urban areas

This information has been given in a publication brought out by the National Buildings Organisation (NBO) of the Ministry of Works and Housing Data pertaining to current building activities in public sector from 1976-77 to 1979-80 and in private sector for the period from 1980 to 1982 have also been given in the publication

The publication also contains residential building cost indices of some important centres of construction activity The index of building cost in Delhi has gone up from 759 in 1982 to 847 in 1983 which is an increase of 11 6 per cent Housing conditions pertaining to Tenure Status of Households, type of construction, number of rooms have been given based on 1971 census The 1981 data on housing conditions is yet to be released by Registrar General of India

The publication provides statistical data on level of housing investment in the various successive Five-Year Plans

International food aid pessimism

G. Srinivasan

The world-wide food aid situation particularly in the third world is very grim in the middle of the Third United Nations Development Decade (1980s) This is compounded by the worst ever draught in Ethiopia, failure of the developed countries in agreeing to the second replenishment of the International Fund for Agricultural Development last year and the increasingly discouraging atmosphere of aid in the western industrial world This aid pessimism does no credit to the cause of the Third United Nations International Development Strategy, says the author

AS THE WORLD IS in the midst of the Third United Nations Development Decade (1980s) today, developing and less developed countries are literally standing at the crossroads The bygone year 1984 was a watershed in this respect as it brought to light the grim and tragic spectacle of a gruelling and worst drought in Ethiopia on the one hand and failure of the industrial countries in agreeing to the second replenishment of the International Fund for Agricultural Development towards the end of October last

Baked and by drought and caught between shrinking prices for their commodity exports and dwindling foreign aid, most African states felt the acute economic hardships in 1984 The United Nations Food and Agriculture Organisation (FAO) contends that an already battered African economy was assailed further in 1984 as widespread drought left 27 parched countries at the mercy of food aid to feed their hungry Describing 1984 as Africa's worst year since the Great Depression, Adebayo Adedeji executive secretary of the UN Commission for Africa terms the continent as the 'very sick child of the international community Prior to 1984, food production showed signs of revival in 1982 but it fell sharply in 1983 Consequently, African developing countries increased food imports from 2 4 billion dollars in 1981 to 5 8 billion dollars two years later But population grew inexorably currently by about three per cent annually While the volume of sub-Saharan Africa's food exports was declining by about four per cent a year between the early 1960s and the late 1970s, food imports were growing by seven per cent annually Projecting recent trends in production incomes and population to the year 2000 Paulino's exhaustive assessment of African food trends for the International Food Policy Research Institute shows a net deficit of 40 million tonnes of basic food staples in sub-Saharan Africa This would be about ten times the net shortfall before the recent droughts caused surge in food imports Nearly half of this hypothetical deficit would be in Nigeria and large amounts in Ethiopia Kenya Tanzania and Mozambique

Record of food aid not inspiring

Before delineating further upon the crisis gripping Africa it is essential to note a few things The Special UN General Assembly in September 1980 on the Third International Development Strategy provided for a massive increase of food aid This is in keeping with the demands of most developing countries and the recommendations of the UN FAO As of 1990 the FAO puts the annual food aid "needs" at 29 million tonnes as against an average annual worldwide volume of actual shipments in the past few years of about nine million tonnes Thus in order to provide food aid even on a minimum scale, the Strategy sought a minimum target of 10 million tonnes of food

nder a new food convention in 1981 The target was ikely to be revised upwards to about 18 million onnes of food to meet requirements by this year lough the record so far has not been inspiring The Economic and Social Council of Asia and the Pacific (ESCAP) published last year reckoned that food aid t the global level for 1981-82 was at 9 4 million onnes Though the world cereal stocks rose by 46 million tonnes from 1980-81 to 1981-82, the net purt in food aid was less than one million tonnes luring the same period The share of food aid in otal food imports declined from 28 to 19 per cent luring the six years, 1976-77 to 1981-82 indicating ncreased import financed with other sources Should his trend persist, as it seems so, the ability of low-ncome food deficit countries to supply food to their opulation may be seriously jeopardised

The World Food Programme (WFP) is an important source of food assistance for the developing countries The Third International Development Strategy urged that its resources be augmented to the minimum target of one billion dollars for the biennium 1981-82 Contributions reached 837 8 million dollars, of which cash constituted 18 6 per cent Pledges as a proportion of biennium targets of WFP have been going down since the biennium 1975 76 The proposed target for the biennium 1985-86 is 1 500 million dollars of which only 1,245 million dollars might be received if the existing rate of pledging persists

Emergency food aid

The most important distribution methods for food aid include emergency aid (special feeding programmes and food-for-work projects) and bulk supply Global emergency aid has in the past years accounted for seven to ten per cent of overall food aid Some 25 per cent went into project aid more than two-thirds were bulk supplies The International Emergency Food Reserve (IEFR), since its inception in 1976, has been assisting developing countries to meet extraordinary contingencies arising out of natural calamities The modest minimum annual target of 5000,000 tonnes of food was achieved for the first time in 1981 Considering the unpredictability of demands on IEFR, a pledging meeting for 1983-84 was held in March 1982 Notwithstanding a strident plea in the International Development Strategy to maintain the reserve at 500,000 tonnes and to strengthen it if possible, through a legally binding convention, contributions amounted to about one third of the minimum target

Be that as it may, the United Nations Conference on Trade and Development (UNCTAD) notes that today all developing countries, except for about a dozen, are regular net importers of cereals such as rice, wheat, barley, maize and wheat flour These countries spend almost 45 per cent of their earnings from exports of their primary products for the financing of their cereal imports and there are more than 50 developing countries whose export earnings from these commodities are not even sufficient to pay for their cereal imports UNCTAD contends that imports of cereals by developing countries have been rising steadily during the last 30 years and touched an all-time high of more than 100 million tonnes valued at 25 2 billion dollars in 1981 In more recent years, African countries showed the largest growth rates of these imports, followed by the Near East countries, Latin America and the Far East According to the Organisation for Economic Cooperation and Development (OECD), commitments to Sub-Saharan Africa's agricultural development, which had fallen in 1982, declined further in 1983, with rich donors' assistance to this sector down by an estimated 20 per cent In the eight Sahelian countries, total net aid disbursement in real terms (1982 prices and exchange rates) in 1983 were 1,000 million dollars, down about 250 million dollars from 1982

Africa's woes were starkly portrayed by the World Bank in a new report which proposed a "Joint Programme of Action for Sub-Saharan Africa" Africa may give a preview of the long-term food crisis that is only starting to develop Since 1970, grain output per person has dwindled about one per cent per year By 1982 it had fallen a total of 12 per cent In 1983, a year of record drought throughout much of Africa, the grain harvested per person fell an additional 14 per cent for a total drop of 26 per cent since 1970 By 1984, survey teams from the UN FAO reported that 22 African countries were facing famine, including Angola, Chad, Ethiopia, Ghana, Mali, Senegal, Somali, Tanzania and Zimbabwe The decline in per capita food production in Africa has led to an increase in grain imports from five million tonnes in 1970 to 20 million tonnes in 1983, a four-fold increase in little over a decade The FAO team estimated that in addition to the usual commercial imports, five million tonnes of emergency relief will be needed in 1984 to stave off famine in the region

While the severity of the crisis afflicting Africa calls for long-term commitment of sustained aid disbursement as well as food aid on a higher scale, the performance of African agriculture can also be improved by providing (i) adequate farm credit facilities, (ii) appropriate producer prices regularly under review for adjustments (iii) sufficient supply and timely delivery of inputs (iv) adequate marketing infrastructural and storage facilities and (v) effective extension services The donor countries on their part should take into account the following (i) greater rationalisation of aid allocation and more intensive coordination among donors, (ii) putting funds invested to more effective use, and (iii) more effective efforts to bring about more favourable framework conditions and consistent policies on the part of donor countries

IFAD lacks resources

In 1984, the International Fund for Agricultural Development (IFAD), a small United Nations agen-

(Continued on page 13)

The Keynesian relevance in third world

S.K. Ray

In this second and concluding part, the author discusses the concern of Keynesian economics with overall economic phenomena, the flows, propensities, currents, aggregates and its stance of eschewing assumptions and tackling the gargantuan problems relating to employment, output and income at the national level as more relevant to the emerging economies of the third world Besides, Keynesian economics is working in laying down the economic policies and determining the pattern of growth as well

IN ORDER TO EXAMINE the relevance of the Keynesian thesis to the economies of the third world, I might as well take up each one of his crucible-concepts, one after the other, as a growth-determinant for a developing economy

Keynes wrote many books of great importance, but none more epoch-making in the evolution of economic literature and policy than The General Theory While the book evoked unprecedented response both in his own time and after his time, Keynes himself had an inkling that he was, while writing The General Theory, doing really something big.

In this context, economists writing on Keynes or his literature never tire of what he (Keynes) wrote to George Bernard Shaw With an uncanny foresight, Keynes wrote to Shaw that he was writing a treatise (The General Theory) which might change the course of history in the development of economics, in terms of its utilitarian development in respect of poli and statecraft In the decades that followed, ho completely has Keynes been vindicated, and his pe spicacity revealed

The General Theory was a bible, so to say, as mu for the economists (themselves), who have been assigned in the Keynesian scheme of things an impo ant role in both laying down the economic polic and in determining the pattern of economic grow

In the preface to his magnum opus Keynes wro This book is chiefly addressed to my fellow econ mists I hope that it will be intelligible to othe But its main purpose is to deal with different qu tions of theory, and only in the second place w the applications of this theory to practice

This was how he began his Preface And, this (while referring to the rather revolutionary charac of his concepts) how he concluded The composit of this book has been for the author a long strug of escape, and so must the reading of it be for m readers if the author's assault upon them is to successful, a struggle of escape from habitual mo of thought and expression The ideas which are h expressed so laboriously are extremely simple should be obvious The difficulty lies, not in the ideas, but in escaping from the old ones, which ram for those brought up as most of us have been, every corner of our minds

While violently breaking away from most of old (classical) beliefs, Keynes called his book general theory' in two connotations The discou on economic phenomena with the classical and Keynesian literature have been confined more less to the peripheral limitations of particular special set(s) of circumstances, and therefore con sions could not be derived except by qualifying

ne with the omnipresent remark, ceteris paribus her things remaining the same)

This led the classicists to build up their theories assumptions, a la Marshall, Pigou and others, and y could not always precisely validate their conions to the economic scenario Keynes, therefore, k up the exploration of the economic phenomena ncipally in three broad spectra First, in sharp ntrast with the classical economists, who, so to mostly dwelt on the firm or the commodity, ynes developed his theory of employment, output l income for the entire economic scenario, or in ier words, the economy Keynesian economics refore, was throughout concerned with the overall nomic phenomena, the flows, propensities, currents l aggregates

It is not that Keynes turned away completely from analysis of individual commodities or ns or circumstances not at all but he tackled m as sockets in a beehive which was the national nomy His preoccupation, therefore was with the gregates of demand supply and employment total nsumption, investment and saving of the society d national income and output considered on a icroscope

He wanted to explore at any given time or country at was the aggregate level of employment (be it unployment disguised unemployment partial or full ployment) and what was required to be done to hieve fuller employment at a satisfactory or viable el of equilibrium He addressed himself to the ues relevant to the national output and income on e same lines

Keynes as a matter of fact, was an economist for s country time and world and not merely an onomic consultant for his firm or treasury (both which at one time or the other he did serve) and s therefor concerned with an economic ethos d strategy for an economic system in its entirety

Relevance in the third world

Nothing could be more relevant to the third-world onomies than the Keynesian stance of eschewing sumptions and tackling the gargantuan problems lating to employment output and income at the naonal level One should consider the undesirable nsequences of devising the policy of economic development merely on the edifice of an econometric odel built up on a number of assumed variables or noring the forces of some of the impo tance variables play, and more than that not changing the model the strategy even when circumstances or variables hange This has resulted in economic policy in a umber of developing economies even when edded to national economic planning, crumbling or oing away with every wave of change in the prevailg circumstances

Secondly, most of the third-world democracies, even when endowed with vast national resources, do provide almost a laboratory-example of the Keynesian approach to economic growth in the national spectrum For, more than once, and in the case of more than one developing economy, the futility of tackling the vexed question of economic development in small grooves or sectoral patterns, divorced from their national objectives, has been amply illustrated

As a matter of fact, post-independence or contemporaneous development endeavours of Zaire, India, Thailand, Sri Lanka, Indonesia Argentina, Uganda Nigeria and Bangladesh, amongst others provide a number of typical illustrations of countries which in devising the statecraft on economic development, did not perhaps always reckon with the Keynesian wisdom, and not infrequently got into the rut of trying to develop an area even at the cost of the economy and leading the state to undertake overlapping investments over-runs of infrastructure and similar other distortions or wastages in the national scene

The 'Indian' vintage

I do appreciate that this is perhaps stretching the argument a little too far, but, then, Keynes did commence his exercises in economics with the Indian situation of an under-developed economic system with particular reference to money, currency and finance And I may not be wrong to believe that this did have an impact on the subsequent ramifications of the Keynesian literature

Keynes heralded his emergence in economic literature at the beginning of the twentieth century with his maiden dissertation Indian Currency and Finance (1912) In fact Keynes started his career earlier with Indian affairs "In 1906 he passed second into the civil services getting his worst marks in economics—'the examiners presumably knew less than I did'—and chose the India office, partly out of regard for John Morley and partly because in those days of smooth-working gold standard, the Indian currency was lively monetary issue and had been the subject of Royal Commissions and classic controversies "

The quotation is from the obituary on Keynes that appeared in The Times London on 22 April 1946 Later in course of the same writing, The Times commented, while mentioning about the first work of Keynes "To find an economist of comparable influence one would have to go back to Adam Smith His (Keynes') early interest was primarily in money and foreign exchange and there is an austere school of thought which regards his Indian Currency and Finance (1912) as his best book "

This view however debatable particularly with his giltedged General Theory having later influenced

the economic thinking ever since the same was published in 1936, deserves to be considered with some seriousness Let us not overlook the fact that Indian Currency and Finance was not only Keynes maiden venture, it was also a venture that did count in the corpus of economic literature, and with the background of an underdeveloped economy of the Indian vintage at the beginning of the century marked by low productivity abject poverty imperial preference (another name for long-term preparations), low-key equilibrium, and the rest, this book certainly was embryonic in regard to the later Keynesian dissertations

In fact, a few years earlier in 1909 to be precise, Keynes wrote his first article on economics Recent Economic Events in India and analysed the consequences of the world-wide depression and financial disturbances of 1907-08 on the Indian situation, with particular reference to the rupee-issue in the domestic and international (particularly sterling) money markets

In this article and in his book on Indian economy, Keynes delineated the problems that are relevant to an underdeveloped economy where poverty is the law and barriers to development require to be broken with precipitate impulses for growth to be generated by the state

Simply stated the Keynesian economics had thus (should we say ?) an Indian background in the sense that the adumbrations started with the kind of problems that were then prevalent in underdeveloped India struck with poverty inequity and low-key equilibrium and are now manifest in many a country in the third world and these countries and their problems continued to receive their share of interest in his later writings and speeches particularly from around his Bretton Woods days No wonder therefore that one should discern a Keynesian relevance to the economic theory and policy of the third world

Money, the pendulum

The Keynesian economics revolves around money its role in economic growth through spending non-spending (hoarding) and investment To any reader of economics these concepts are well-known and need not be elaborated in the present context A few essentials of the general principles however could be specifically enumerated from the General Theory in the form of a quintessence in broad outline

1 The common man as a general rule prefers to have money in his cash-box or till or bank account rather than have it spent in investments This tendency for hoarding is rather paradoxical since by hoarding people get no return while by lending they get a return or interest or profit

2 The paradox is perhaps explained by the feel of security that liquid cash or hoarded money gives to its owner

3 In case of a country with an uncertain present and a dim future in respect of economic development the community's desire to own money rather than wealth that would yield income, becomes more manifest as a clear-cut propensity

4 Interest is the variable that would determine the extent of liquidity-preference of the economy The greater the rigidities, the unwillingness to lend or invest and the desire to hold or hoard money the higher will be the hikes in the rate of interest in order to gradually win over the disinclinations to investment

5 Monetary policy, therefore would have a major role to play in the nature and extent of economic growth as only by appropriate basic monetary forces e.g. interest lending, spending investment agriculture and eventually employment and income that the pace and progress of economic growth can be delineated

The basic Keynesian concepts relating to money as evolved in the Keynesian literature (e.g. Indian Currency and Finance Treatise on Monetary Reform A Treatise on Money and the General Theory in the main) have been reduced above to deliberate simplicity in order to bring out its significance clear cut overtones to the economics of the third world

The basic rigidities as evidenced in the low-key equilibrium of a developing economy are let us not emphasise accidental to what succinctly is the essentially Keynesian concept on money as briefly outlined in this article In fact to refer again to the Indian case which is typical of the third world these rigidities are so pronounced that there is a parallel or subterranean economy functioning, which is always at war with the official economy

Hoarding of money is the practice rather than the exception and it manifests itself in hoarding of currency gold specie treasure and every collateral conceivable It would easily negate the government easy or dear money policies in the way it would require and decide to manoeuvre

It is my belief that the way the Keynesian monetary principles may operate is in certain direction rather a typical of a very prosperous economic system which has already achieved full or near full employment until it reaches the next turn of the economic cycle On the other hand a third-world developing economy would suit the Keynesian precepts to the hilt, what with the interwoven phen

ena of hoarding liquidity distortions, rate of interest, spending vis-a-vis investment, and the unambiguous emphasis on monetary policy requiring the ate to function as a catalytic agent for economic owth

Investment and employment

Keynes believed that one of the vital determinants f employment was investment in the kind of modid capitalism that had come to be prevalent in the mocratic economies of the world This is derived om the Keynesian concepts of economic surplus

In today's world, marked by inequitous distribution f income and wealth, twentyfive per cent of the ople by and large absorbs seventyfive per cent of e income With this being the state of affairs the tal consumption is much less than what it could ave been if distribution was equitous or, in other ords, if the entire community could optimise the ciety's spending on consumption

As this is rather contrary to prevailing social circumstances, this leads to the emergence of sizable nvestible surplus What with the limitations on aggrgate consumption as indicated above this surplus ould better be deployed on production that need ot be lined up for immediate consumption Such roduction is what is called investment which involves economic activities employment and further roduction and generation of further surplus

The policy and programme in regard to such nvestment is crucial to the economic development hat a developing economy of the third world comes et before itself as the growth objectives for the state o pursue

Here again the third world economies would provide the laboratory for illustrating the Keynesian heory of surplus investment employmen output ind income in a many splendoured manner The inequity of income and distribution on either side of he poverty divide is the most prominent in such economies impinging on the availability of the investible surplus The need and scope of investment as also of the generation of employment are also the maximum in such economies

Investment being the base for the programmed rowth of the economy it is on the pragmatism reflected in the policies on national investment (and employment) that the pattern of long term development will be determined Rest both at macro and micro levels including the trends of spending saving and consumption will follow along with equity in distribution, which the state has to arrange and enforce

If the future of the economy looks uncertain Keynes formulated in his General Theory, the natural tendency for money would be to get hoarded and in order to channelise the surplus available after consumption into investment for formation of capital and wealth) and thereby to generate employment, by winning over the disincentives (to investment), a higher rate of interest will be necessary

If the expectations of national economic development are bright, the surplus gets naturally transformed into investment, at a much quicker pace of absorption, and at a much softer rate of interest But if the economy is heading towards a gathering depression, or even if the economy is moribund at a low key disequilibrium, investment will become rigid and prospects of economic revival rather dim, unless by precipitate and aggressive policy the state is able to underwrite economic revival by promoting investment and generating employment and real output without at the same time handing over the reins of the economy to the forces of inflation or influences of a parallel substerranean economy

These are the concepts, both in terms of diagnosis and prognosis that today apply, mutatis mutandis, to the unique but multi pronged socio-economic problems of the developing economies of the third world

Economics of depression

Finally, in the present context, a few words about the Keynesian concept of depression should be relevant, as the the fundamental aspects of a depression economy in the Keynesian sense are manifest in very clear profile in many a third world economy That some of the Keynesian concepts are apt and appropriate in their application to the economic situation of depression is well known These therefore are similarly applicable to many third world economies suffering from stagnation

Depression would have the effect of depressing the demand for money, and would enable direct or sponsored spending by the state to somehow get by, without either a concomitant rise in the rate of interest, or the mounting inflationary pressure on prices offsetting the good effects of governmental spending and investment by the state generating employment and economic growth It is a case of tight-rope walking in the management of the economy wherein the natural impulses are towards a contraction of economic activities while the state somehow endeavours to inject warmth into the system by sponsoring national spending and investment

There is an element of similarity between the problems and policies of a depression-infested economy and the economics of an underdeveloped low-key equilibrium economy both embarking upon programmes of revival or growth It is in respect of these similarities that the Keynesian prognosis does really suit as a cure for the ailments of a developing economy that would require growth sans deflation or inflation

Keynes has sometimes been called an 'economist of depression The 'orthodox Keynesian school however, resented this and felt that it would be more appropriate to characterise Keynes 'as an anti-cyclical or as an anti-deflation or anti-inflation economist'

Economist for the third world

My rejoinder would be, why go about it in such a round-about way ? Why not, more succinctly call Keynes an economist overwhelmingly for the third world ? One may not in my opinion, be far from the truth In fact, one may even be at the threshold of the truth, and all that may be necessary is further dedicated research on John Maynard Keynes and the emerging economies of the third world, in order to prove my point to the hilt □

(*Continued from page* 13)

cy set up as a "joint venture" by rich industrial countries and oil producers to combat hunger and poverty in the poorest countries, was left without fresh infusion of resources Set up in 1977 to combat hunger and poverty by making loans to people who were being bypassed by development projects, the issue of IFAD's second replenishment of resources was unresolved in 1984 when talks between the United States and OPEC failed Western countries have so far donated 58 per cent of their funds and OPEC nations 42 per cent The agency was given one billion dollars for the first phase of its work from 1975 to 1980 and 1 1 billion dollars for the 1981 to 1983 period With loans to over 150 projects, the fund is estimated to have helped some 40 million people in 83 developing countries Even in the first replenishment of 1 1 billion dollars there was a shortage and the second replenishment (1984-86) negotiations have foundered because both the donors the United States and the OPEC countries could not agree on the likely size of the Fund While the difficulties of the OPEC countries are understandable in view of the continued slide in crude prices and attendant external deficits, the reluctance of the United States to pay its share for a good cause is a matter of deep concern

All said and done, it is clear that the atomosphere of aid in the western industrial world is none too encouraging and there is widespread anti-development aid sentiment Everywhere, even in countries that have been exemplary in their development aid such as Sweden and Holland, which invest more than one per cent of gross national product in aid, fresh questions are being posed as to the vindication of development aid, what aid is extended and what is received in return This 'aid pessimism" does no credit to the cause for the Third United Nations International Development Strategy and many of the targets purported for the decade have not even reached half-way stage, though the UN Third Decade's strategy is in a midpoint of the 1980 □

Planning Commission reconstituted

THE PLANNING COMMISSION has been r constituted with Dr Man Mohan Singh, Governo Reserve Bank of India, as the Deputy Chairman the Commission

As usual, the Prime Minister will continue to h the Chairman of the Commission

The other members appointed are Shri Ra Chelliah, Shri Hiten Bhaya and Syed Abid Hussai They will be in addition to Prof M G K Menon ar Prof C H Hanumantha Rao, two of the existi members

Besides, Union Finance Minister, Shri Vishwana Pratap Singh and Union Defence Minister, Shri P V Narasimha Rao, will also be members of th Commission

Minister of State for Planning is Shri K R Narayanan

With this, the Commission has ten members inclu ing Chairman, Deputy Chairman, two Union Cabin Ministers, five whole-time members and the Minist of State for Planning

National Development Council (NDC) is the e larged Planning Commission which, among other comprises Chief Ministers of States and is a plenar body to consider, formulate and approve of apprea to the five year plans its direction and main thrus including priorities within the constrants of resource

The reconstituted Planning Commission is a bo of experts representing management economics a science and technology

New entrants

Dr Man Mohan Singh was Governor of Reser Bank of India before his present position Earlier h held the post of Member-Secretary in the Plannir Commission Still earlier, he was Union Finan Secretary

Shri Raja Chelliah, a public finance expert, w director of the National Institute of Public Finan and Policy, New Delhi before his present assignmen Earlier, he was a member of the Economic Administra tion Reforms Commission, headed by Shri L K Jh

Shri Hiten Bhaya, a technology expert, was former Chairman of the Hindustan Steels and director of th Indian Institute of Management, Calcutta

Syed Abid Hussain, an administrative and manag ment expert, was formerly Union Commerce Secretar belonging to the IAS (Andhra Pradesh Cadre) H has since retired from civil service

Tasks before the fourth pay commission

Y.R Hargopal Reddy

Here the author discusses the issues before the fourth Pay Commission in the light of the observations of the Supreme Court of India in Delhi Veterinary Association versus Union of India case (AIR 1984 SCP 1221) hoping that the Pay Commission would take into consideration the sound principles set out by the Supreme Court in the instant case to evolve an equitable national wage policy to give effect to the Constitutional goal of equal pay for equal work' outlined in Article 39(d) of the Constitution

THE INDIAN CONSTITUTION was adopted to bring about a radical change in the socio-economic conditions of the society The preamble to the Constitution in the first place guarantees Justice liberty equality and fraternity To give effect to these cherished ideals the framers of the Constitution embodied fundamental rights and directive principles in parts III and IV of the Constitution and made the former justiciable before a Court of law and the later non justiciable In the recent years directive principles influenced the decisions of the Supreme Court to a large extent As a result the Court began to read directive principles into fundamental rights to secure socio-economic justice to different sections of the society

Equal pay for equal work

Article 39 (d) of the Constitution proclaims equal pay for equal work for both men and women as a Constitutional goal The U N Human Rights covenants, 1966 also recognized fair wages and equal remuneration for work of equal value without distinction of any kind It is to be noted here that India is also a party to the Human Rights convenants But since the commencement of the Constitution equal pay for equal work remained as an empty slogan However in the recent years the activist Supreme Court in Randhir Singh v Union of India (AIR 1982 SC 879) conceded the demand for 'equal pay for equal work In Randhir Singh the petitioner was a Driver constable in the Delhi Police force under the Delhi Administration and he demanded that his scale of pay should at least be the same as the scale of pay of other drivers in the service of Delhi Administration He further contends that the drivers in Railway Protection Force Secretariat non-secretariat offices in Delhi etc were drawing more than the petitioner The case of the petitioner is that he discharges the same duties as the rest of the drivers in the other offices but is drawing less He complains that there is no reason what so ever to discriminate against the petitioner and other driver constables in the fixation of pay scales The Union of India argued that there is no question of any hostile discrimination in the fixation of pay scales since the drivers in the other departments are not similarly situated

In Randhir Singh the Court opined that where all things are equal that is where all relevant considerations are the same persons holding indentical posts may not be treated differently in the matter of their pay merely because they belong to different departments (AIR 1982 SC P 881) The Court further observed Construing Articles 14 and 16 in the light of the preamble and Article 39 (d), are of the view that the principle 'Equal pay for equal work' is deducible from those articles and may be properly applied to cases of unequal scales of pay based on no classification or irrational classification though those drawing different scales of pay do identical work under the same employer (AIR 1982 SC

882) The observations of the Court may lead to an inference that equal pay for equal work a directive principle acquired the status of a fundamental right because of the most remarkable acts of judicial creativity and activism

Issues before the Fourth Pay Commission

Delhi Veterinary Association v Union of India (AIR 1984 SC P 1221) is another instance where the rationale behind the fixation of pay scales has been questioned by invoking Articles 14 16 and 39 (d) of the Constitution In the instant case the Supreme Court emphasized upon the factors to be considered by the Fourth Pay Commission while fixing the pay scales of the employees of the Government They are as follow

The Fourth Pay Commission has to follow certain basic principles in fixing the pay scales of various posts and cadres in the Government service The degree of skill strain of work experience involved, training required responsibility undertaken mental and physical requirements disagreeableness of the task hazard attendant on work and fatigue involved are according to the Third Pay Commission, some of the relevant factors which should be taken into consideration in fixing pay scales It follows that the Fourth Pay Commission has to follow the above factors in fixing the pay scales

The method of recruitment the level at which the initial requirement is made in the hierarchy of service or cadre minimum educational and technical qualifications prescribed for the post the nature of dealings with the public avenues of promotion available and horizontal and vertical relativity with other jobs in the same service or out side are also relevant factors to be considered by the Fourth Pay Commission

The paying capacity of the Government the total financial burden which has to be borne by the general public the disparity between the incomes of Government employees and the incomes of those who are not in Government service and the net amount available for Government at the current taxation level which appears to be very high when compared with other countries in the world for developmental purposes after paying the salaries and allowances to the Government servants have also to be borne in mind by the Fourth Pay Commission

There should be an evolution and implementation of a scientific national policy of incomes wages and prices which would be applicable not merely to Government services but also to the other sectors of the national economy As far as possible the needs of a family unit have to be borne in mind in fixing the wage scales

In these days of galloping inflation care should also be taken to be see that what is fixed today as an adequate pay scale does not become inadequate within a short period by providing an automatic mechanism for the modification of the pay scales

In the instant case the court dismissed the writ petition with the hope that the Fourth Pay Commission which is presided over by a former Judge of the Supreme Court would consider the representation of the petitioners sympathetically The Court expressed the hope that the Fourth Pay Commission will keep in view all the relevant factors while determining the equitable pay scales for the vast number of employees of the Central Government and of the Union Territories

The Court was also optimistic when it pointed out that the Fourth Pay Commission will not just be another Pay Commission as in the past but will lay down sound principles regarding the salary structure of the public services It is hoped that the Fourth Pay Commission would take into consideration the sound principles set out by the Supreme Court in its momentous order in the instant case to evolve an equitable national wage policy to give effect to the Constitutional goal of 'equal pay for equal work' outlined in Article 39(d) of the Constitution It is also important that persons who are concerned with the fixation of wages will take a note of the factors emphasised by the Supreme Court and will insist upon the Fourth Pay Commission for its adherence to evolve a mutually acceptable National Wage Policy

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NHDC to open more regional depots

The National Handloom Development Corporation (NHDC) has taken steps to set up regional depots at more places in the country for the timely supply of yarn to the weavers at cheaper rates One such depot has already been opened at Guwahati Besides opening up yarn depots the Corporation is also expected to play an important role in marketing of handloom products by opening of marketing outlets throughout the country A provision of Rs 3 crores have been made for the year 1984 85 for opening of regional depots and retail sale outlets

Details of a long term marketing strategy to be adopted by the NHDC are being worked out and it is expected that it would be able to make a beginning in the field of marketing of handlooms during the current year itself

Though primarily a marketing organisation the Corporation has also been suggested to set up spinning mills processing houses reeling units etc as captive units for the handloom sector

The Government of India set up the National Handloom Corporation in 1983 at Lucknow with a view to helping the industry in getting regular supplies of inputs viz yarn dyes and chemicals at reasonable prices

TOWARDS SOCIAL REVOLUTION
a Case for Economic Democracy -
VASANT SATHE

A Serialisation 12

The Economic Democratic Pattern

Towards the solution

HAVING ANALYSED THE MALADY, by now the reader would, in desperation, ask for the remedy The remedy also has to achieve the objective, i e, unity and social justice that would ensure the balanced economic growth of the entire people

What do we mean by economic growth? The elementary requirement for the growth of an individual in any society is that he should be enabled to either produce goods or services And then, equally important is the requirement that the goods and services produced by him should be exchanged or distributed This economic activity in normal terms, left to itself, is operated by what is known as the law of demand and supply Thus, first, it is the natural need for essential commodities such as food and clothing which become the main demand Only after that, if a person has larger purchasing power, does not purchasing power generate a demand for items of comfort and luxury? The purchasing power comes as a return for what he has produced and has been able to supply to others either in the form of goods or services The surplus generated as a result of this exchange becomes the capital It is this capital which emerges from the economic activity of the labour used on the land, namely, natural resources and when accumulated and used by the entrepreneur it becomes an investment to generate growth Thus the main factors responsible for any economic activity and generation of growth are the availability of land labour and capital, to be used by the entrepreneur

To bring about a harmonious and balanced growth in the living conditions of a majority of our population, two measures have to be taken simultaneously

First, we should increase the purchasing power of the population, mainly living on agriculture In developing countries, an overwhelming majority of the population is known to be living, at the subsistence level, on agriculture The only way the purchasing power of the population can be enhanced is by increasing the price of the agricultural produce and the wages of the agricultural labourers But, the moment this is done, there would be a twofold effect Immediately, the demand for essential consumer goods would go up and the market which is at present restricted to a small community of less than 5 to 10 per cent of the population, will jump to about 10 to 15 per cent This given the forces of market economies, will tend to push up the prices, resulting in sharp inflationary pressure

Second, as the labour cost in terms of wages increases, the landed class would tend to employ less agricultural labour and would shift to modes of mechanisation thus immediately displacing labour and causing unemployment even in the existing labour force

Hence, the only way to prevent this slideback is to ensure a simultaneous creation of capacity on a decentralised and dispersed basis to produce consumer goods by utilising the labour force in the agricultural sector itself

Initially, the quality of consumer goods such as cloth and clothing leather goods, housing, fuel, household articles, soap and other cosmetics may not be of a very high standard but yet given a proper marketing system, they would at once create employment and fulfil the consumer demand

Modern technology such as in the field of electronic consumer goods, can be harnessed to produce

consumer items on an economy of scale where the assembly of these items (such as transistors, television sets, tape-recorders, calculators and watches) becomes more or less a cottage industry, with only the components being manufactured on a decentralised basis This would not only generate employment but would also help in directly instilling a scientific temper among the people by the process of direct education

It has been proved time and again that the so-called illiterate people are capable of adopting and working on the most modern and sophisticated machines once they are taught how to handle them Girls who had never seen a watch have proved to be the best workers in watch assembly units Machine tool operators of Ludhiana have shown that, given a sample of the most complex engineering component, they can make a copy of it Moreover, there is no dearth of trained technicians and scientists either

What is needed is a well-planned and balanced growth of both production and distribution of the goods needed to improve the quality of life of an entire people This cannot be achieved unless they are engaged in the production of these goods and are capable of earning wages, giving them the purchasing power to buy the consumer goods

Thus, instead of an economy based on a limited market with a section having a near unlimited capacity to buy the high-priced luxury goods, both employment and purchasing power could be provided to people who are without them

The capitalistic society

If we want to save the situation, we must incorporate all the three factors, namely, land, labour and capital in a planned and balanced manner, so that there is an in-built mechanism of checks and balances and the exploitation of one section by another is prevented Therefore, the genuine surplus remains available to the whole society for utilisation in the right direction of growth ensuring simultaneously distributive and social justice This, in turn, gives impetus for a faster and balanced growth of the entire population, creating larger opportunities for the people

The basic objective in the field of economic growth is to encourage the production of goods of mass consumption on a scale of economy so as to make them inexpensive and available to the largest number of people In this process, we have also to think in terms of creating employment opportunities on a larger scale Along with the production of such goods automatically, distributive activity must also take place and that would lead to the further growth of employment potential and economic activity

The most important factor that has to be borne in mind is that in the entire economic activity, concerned with both production and distribution, there is a value-added concept This concept includes within its scope the question of foreign exchange resources

Distortions take place in any economic activity only when the result of labour, instead of being fairly and equitably distributed in the very process of the economic activity, gets accumulated in the hands of a few and that accumulation itself becomes power, leading to the further growth of those few who use it to further exploit the rest by denying them a fair return on their labour

In modern day-to-day practice, the main factors in economic activity can be identified as (1) the entrepreneur or the people who envisage and plan a particular productive activity, (2) labour, which includes managerial, technical, skilled and unskilled categories and (3) capital, which in modern times is mostly available through financing institutions such as banks and the Life Insurance Corporation It is the entrepreneur who plans and secures the land, employs labour and obtains capital from the financing institutions Thus, although he plays the key role, it is not necessary that the entrepreneur himself be man possessing his own substantial capital In modern practice, an entrepreneur seldom invests the entire capital In fact, more than 80 per cent of the investment and capital required for setting up the economic activity, whether production in industry or distribution in trade, is obtained from the financial institutions where the saving of the entire society is accumulated and kept Thus, the earlier risk which the individual investing the capital had to bear also does not exist in modern times to this extent

In addition to the financial institutions capital is made available even from the budget of the government through the revenues that it gets from the people Thus, it can be rightly claimed that this capital belongs to the people as a whole and, therefore they can legitimately have a voice or a say in its use through their representatives

After land and capital, we come to labour In fact it is human power which collectively creates and produces the goods that are intended to be produced by productive industrial activity

As we have seen, it is only when one factor deprives the other two factors of their legitimate shares in the productivity activity that the surplus, instead of being fairly distributed gets accumulated in the hands of a few This leads to the concealment of the real surplus from the majority of the people and to the creation of unaccounted money According to Raul Prebisch "The disparity cannot be remedied by curbing or suppressing the democratic process, rather must the economic process undergo a fundamental transformation, so that individual initiative and market forces can acquire the social efficacy they lack today"

If we consider the fact that the government, as representing the people is the custodian of public finance, which is the main source of capital, then, when

an entrepreneur or an industrialist or a trader takes the capital from the public financing institutions and hides the real surplus generated from the productive and distributive activity both from the labour employed by him as well as from the financing institutions by showing a false surplus or by siphoning away the surplus during the process of production itself and, in fact, manipulating the accounts to show losses, it is here that the real cheating takes place and unaccounted money starts growing

Therefore, unless all the three factors contributing to the economic activity, both in the field of production and in that of distribution, carry equal weightage in the management, the likelihood of one being cheated by the other cannot be ruled out

Even from the purely democratic point of view, if political democracy is to be maintained then the other side of the coin, namely, economic democracy also has to prevail In effect, the entire economic activity must also be of the people, by the people and for the people and not in the name of the people, by the few and for the benefit of the fewer

In our model of economic democracy, what we are propagating is that the organisational structure of economic activity itself must be such as to provide for the democratic participation of all economic forces in a balanced manner

The economic activity both in production and distribution is carried on mainly in two sectors—what are known as the organised sector and the self-employed sector In the self-employed sector very often the three factors tend to overlap, particularly because the entrepreneur himself is the self-employed labour, and the scope for exploitation of one by the other at this unorganised small-scale level is negligible Hence the model of the economic democratic pattern need not be strictly applied to the unorganised sphere

But in the organised industrial sphere, the structural model of economic democracy can and must be applied if we really want to bring about a transformation democratically and peacefully and if we sincerely wish to bring about a balanced growth in the living standards of our people

The Economic Democratic Pattern

The basic tenets of the capitalist mode of production and distribution have been analysed in the foregoing paragraphs The economic progress and the high standard of living in a capitalist system are in fact, based, as the developments in all such societies show, on a highly inequitable distribution of income in the initial stages But the system did not suffer from an incapacity to absorb the poor and the assetless because high incomes and high savings were utilised in the early stages of growth in building such a huge structure of production that everyone got employment and earned high incomes in the process In addition Western capitalist countries had the advantage of getting cheap raw materials from less developed colonies and then of selling the finished products in captive markets The high incomes and high savings were not frittered away in conspicuous consumption or concentration of economic power without expanding the production structure Such a model was not considered to be feasible in the Indian context due to lack of a sound industrial base as also the absence of entrepreneurial cadre and an organised private sector India had then more traders and businessmen whose ability was more pronounced in generating more money income by exchange (sale and purchase) of goods other than producing more goods and services in a competitive situation

Jawaharlal Nehru, the architect of India's economic development, thought it prudent, and rightly so, that the government should lay down the foundations for a relatively non-remunerative structure of production, i e, basic and capital goods industries, and provide adequate potential for the growth of the private organised sector industries and small-sized industries This concept of mixed economy was expected to bring about integration for increased production and the equitable distribution of income The review presented in this work clearly shows that this objective has not been achieved In addition to the capitalist model, other models for achieving equitable growth such as cooperatives and the joint sector and promotional financed growth through public institutions also failed to achieve the goal The 20-Point Programme of Mrs Indira Gandhi is a direct attack on the inequitable distribution of incomes Income distribution under this programme is sought to be achieved through direct addition of income or economic benefits to the target group i e the people below the poverty line Under the 20-Point Programme an attempt is made to provide additions to durable and direct consumption items But the structure and mode of production are not altered If this alteration is not made, it would be like trying to warm the house in winter without closing the doors and windows

The model of the economic democratic pattern proposed here attempts to provide a solution by modifying the structure and the mode of production, in a peaceful manner, without altering the political system

The new structure

Under this model of economic democracy, in every organised sector the board of management shall consist of an equal number of people representing the entrepreneur the financing institution and labour The entrepreneur shall mean the party which has set up a particular industrial project for trading activity in an organised manner

Now, presuming that in an organised industry there are nine members on the board of management, three representatives shall be of the entrepreneur three shall be nominated by the financing institutions, and,

as the capital belongs to the people as a whole, of these three representatives, two shall be nominated by the party representing the people at the Centre and one by the party representing the people in a particular state Thus, among these three, one will represent the financing institution as a financial expert, the second will represent the political party which has been elected to form the government at the Centre as an elected representative of the people and the third will represent the political party which has been elected by the people to form the government in the state The idea here is to have direct contact among the representatives of the people involved in a productive activity in order to ensure that the economic objectives of justice and fair play are properly achieved

The last three members will be elected from among the entire people employed by the industry All employees, whether they are formally made shareholders or not, will have a right to annually elect three representatives belonging to managerial technical and non-technical categories, respectively

Thus, the board of management will have equal representation of all the three major factors of production There would then be no possibility of denying the knowledge about exact amounts spent on the quality and quantity of raw material used, and the expenses incurred for other productive inputs and the goods produced The price at which they are sold will also be known fully to the representatives of the labour as well as the representatives of the people nominated through the financing institutions In modern practice, it has been noticed that the person who organises or plans the industrial or trading activity, eulogistically called an 'entrepreneur', normally gets away with the real surplus

In the foregoing structure, this would not be possible The board of management after having disbursed (1) the return on the capital borrowed (2) the return on the investment initially made, (3) a fair return to the entrepreneur and (4) a fair return in the form of production incentive or production bonus to labour, shall be able to arrive at the net surplus

Such an economic structure will apply not only to the entire organised sector in the country both public and private, but to the entire economic activity in every single field

As the entire net surplus generated would be known at the very source of economic activity, the whole amount shall belong to the people i.e., the state The state, then as representing the people, would be able to decide the areas in which the national surplus thus generated should be reinvested in order to bring about a growth in the right direction so as not only to provide productive activity but also to ensure the production of essential commodities to secure a minimum decent level of existence to all the members of society

The pattern in the productive activity being clear, which we can describe as a pattern of trimurti or trimurti, there would be only one economic sector in the country and the entire economic sector would be the national sector In the organised sector of industrial production, we can also have a pattern of national organisations in which individual units are members in the fields of different industrial activities which can coordinate and co-relate the various functions to ensure smooth functioning For example, there can be a national body for the manufacture of drugs, steel, cement, fertilisers, coal, energy, food and agricultural produce and so on At every level, the trimurti structure would reflect the representation in the same manner as in each unit

It is thus the national bodies, which would have representatives of the elected government on them, that would formulate the policies and programmes for the growth of industrial activity according to the priorities and requirements of the people Being organisations mainly consisting of those involved in economic activity they will ensure that minimum constraints are placed on the growth of economic activity, and in fact, the job of the national organisations backed by the government, must be to create conditions, and provide facilities, conducive to speedier economic growth involving the maximum utilisation of the work force of the country

The role of the administration and of the bureaucratic structure under this system would be minimal Most of the existing bureaucratic machinery would get tagged on as an integral part to one or the other productive or distributive sector and will not have, as at present, a role where it has all the power to say 'yes or 'no' and to interfere at every stage but without any responsibility for the implementation of policies and programmes The present administrative pattern although it consists of some of the best brains and the most capable persons in the country is entirely based on unaccountability to the people This system was created to impose checks and counter-checks on a foreign people who could not be trusted and had to be ruled from thousands of miles away The whole system is, therefore based fundamentally on the theory of distrust and a pattern is created so as to have checks and counter-checks at every level in the hope of minimising foul play

Today, without being aware of it, we have virtually built a leviathan in which the entire productive activity of the country is in the hands of those who set up either an industry or a distributive servicing organisation and are actually involved in the economic activity And yet, we have allowed a huge bureaucratic network to develop as a constraint on them This apparatus exists only to say 'yes' or 'no' to a project whose file has to pass from the lowest section officer to the highest ministerial office This state of affairs is not confined to one department or ministry, but is spread over all departments and ministries This merry-go-round goes on not only for months but for years The only way to expedite matters and to obtain a 'no objection' certificate is to resort to the lubricant

of unaccounted money, which is used at every decision-making point, from the lowest to the highest level This is how corruption becomes the rule rather than exception

Surprisingly, although we have decision making bodies at higher levels which are supposed to regulate growth in a planned manner, the fact is that most of the persons who belong to those bodies know next to nothing about either the productive activity or the distributive mechanism This is indeed a travesty of the decision-making process, but because this class also consists of generalists very much like the class of politicians who represent the people and who are the supreme authority presiding over the destiny of the whole society and also because this class of politicians is one of generalists who themselves are as knowledgeable or otherwise about production or productive activity, both these classes seem to have a tacit understanding that they should have the final say in regulating the productive and distributive activities in the country And because these classes are not accountable for actual day-to-day economic activity they feel that they can get away by putting the blame on those who are actually involved in the economic process both in production and distribution

The bureaucratic class is the most happily placed one because its members have an assured permanent tenure of service and are not immediately accountable for the results There are so many levels of decision-making Notings are made in an ambiguous manner so that more than one meaning can always be inferred During the processing of a particular project the officers concerned are transferred at regular intervals and the freshly appointed ones can refer to precedents which can support a decision in any desired manner The ultimate answerability is supposed to be that of the minister who has come to occupy the seat of final decision without knowing much about the field and who is more or less a bird of passage Normally, even if he is an intelligent person he takes time to understand the working of a particular ministry and if he starts expressing views different from those of the bureaucratic set-up, he disturbs its working Very often, when there is a difference of opinion between the minister and the bureaucratic system, it is normally the minister who has to go away or is eased out to make room for another who is more pliable

Once a very senior cabinet minister said that the most successful minister is one who never disagrees with his secretary It must be said that our secretariat cadre consists of brilliant seasoned and experienced bureaucrats who read the mind of the minister and who are willing to make the minister feel that things are being done according to his wishes And a wise minister is one who establishes a quick rapport with the secretariat as a good rider does with his horse very often we think that a minister who represents his party and is committed to the election manifesto can bring about or must bring about drastic changes without realising that, although within the existing framework, a minister, if he takes the bureaucracy along with him, might be able to make some improvement in the working under his charge, the whole system is such that no fundamental change of direction is possible

The bureaucratic system not only suffers from 'fileria', that is, files moving and swelling, but is tied up in knots all the way which makes it not a three-legged, but a multi-legged monster To these inherent incapacitating factors must be added the new phenomenon of the influence of black money, which has become the most effective part currency in use and, because of its tremendous power in the hands of a few, has succeeded in eroding the entire value system at all decision-making levels and points of authority from the highest to the lowest There is not a sphere of life which is not afflicted by this disease, and, like pollution, it has become so all-pervasive that no one who breathes can say that he is free from it

It is, therefore, indeed amusing to see some representatives of the people performing the drama of vehemently and angrily accusing each other of corruption, knowing fully well that all of them are, directly or indirectly, involved in the process which generates corruption In fact, not a single Member of Parliament or a Member of a Legislative Assembly can with any honesty, say that his election expenses were restricted to the amount prescribed by the election law To say that he does not know from where the extra finances have come is to be either naive or dishonest or both The battle of accusations among various politicians is probably only a case of cursing those who have got away with a larger share It is only a matter of degree, but there is no real punch in the attack or criticism about corruption because the person who makes the accusation knows, in his heart of hearts, that he is not free from having partaken of, directly or indirectly, the unaccounted wealth of the country

Therefore, it is not the individuals who are to blame for the existing situation Our country consists of brilliant people at every level who are highly capable The fault as has been pointed out, lies in the system at the administrative level for being unaccountable, at the industrial and distributive levels for allowing one sector to cheat the other two at the political level because the politicians are generally birds of passage in terms of both their tenure and the terms on which they hold office inasmuch as they are hardly in a position to give guidance to those working under them In the meantime the cancer of unaccounted money has grown and has eroded the value system completely that, in effect, it is this unaccounted wealth which dictates the real determining factors at all decision-making levels from top to bottom

The duty of the administrators and that of the representatives of the people should only be to ensure that in a democratic set-up nobody gets away by cheating or deceiving the rest of the society This

should, indeed, be considered a heinous social crime In the proposed structure, it should be very easy to hold every person accountable for his income, as well as his expenses After all, money is what money does, and if every citizen becomes accountable for showing (a) from where his income has come and (b) where he has spent it, it becomes very easy to detect, control and regulate the use of money The whole concept of taxation would undergo a drastic change because the entire surplus generated would be available with the state The concept of public finance operates only when institutions engaged in the economic activity earn incomes and the state wants to take a part of it in the form of taxation In the organised sector the entire surplus would be available with the state and in the unorganised sector it would be generated in the form of indirect taxes such as sales tax and savings

The unaccounted black money is invariably used to generate more easy and quick money by investment in areas where the concentrated affluence can be exploited to make faster gains These areas include the construction and sale of five-star hotels and luxurious residential and commercial buildings with costly fixtures and furniture Futher, black money is used to purchase expensive antiques and paintings for their resale value Most of this money is used as purchasing power to buy the comforts and luxuries which flood the metropolitan markets We thus see the artificial picture of affluence in a few areas of the big metropolitan cities whose main market is the class of people who have a substantial share of the unaccounted money The whole economic activity, as has been shown earlier, is restricted to a very small section of society This leads to growing unrest among the unemployed section of the people (mostly youth) in the urban and rural areas Fortunately, they are so doped by traditional fatalistic attitudes that the only thing that can rouse them has to be barbed in religious clothing or must have some other emotional appeal communal or linguistic or regional It is because of this state of affairs that in spite of the nearly stagnating and stifling economic scene a violent revolution on an economic basis is not taking place and is not likely to take place But as the pressure of imbalance mounts and as the population grows, the small island consisting of vertical growth skyscrapers is some day bound to be submerged in the ocean of poverty that surrounds it The unfortunate part is that the uprisings would not be based on an economic foundation, but could erupt in the form of disintegrating forces with communal casteist linguistic and regional characteristics In such a situation, a leadership which can enthuse and command the confidence of the entire people throughout the length and breadth of the country is also likely to be lacking One need not be a prophet or a soothsayer to foretell the likely dangers of disintegration that would result

All we are seeking is to introduce a structural change through which economic democracy becomes possible at the production and distribution levels In the new structure, the job of the administration would not be to control and stifle, but to serve as a catalyst and to assist the economic process Also, planning and decision-making would be so organised that once broad policies have been laid down by the representatives of the people, it would be left to those who are proficient in a particular field of activity to organise the growth in that field within the framework of the pattern of economic democracy and to achieve the best results for which they would be wholly accountable In effect the entire change is to make the system one of accountability a system which would be result-oriented and in which the productive forces would be fully involved, with a sense of belonging as equal partners This in essence is economic democracy without which even political democracy becomes meaningless

(Next issue : policy for technology)

Rs. 16.5 crore worth railway wagons to Uganda

The Projects & Equipment Corporation of India Ltd a public sector undertaking under the Ministry of Commerce will supply 300 nilway wagons valued at Rs 16.5 crores to Uganda The offer for supply was made in response to a direct enquiry received from Uganda Railways and the contract was secured against stiff competition from several countries

Over the last 15 years more than 7,000 railway wagons valued at over Rs 90 crores have been exported to several countries These include Poland Iran Yugoslavia Malaysia Bangladesh Tanzania Uganda Sri Lanka and Vietnam

To facilitate exports of railway wagons cash compensatory support at the rate of 15 per cent is made available and certain varieties of steel are also being supplied at international prices for export purposes

With a view to increasing export of wagons, the Ministry of Commerce has initiated steps to explore the possibilities of setting up joint ventures for assembly operations in third world countries in order to reduce freight costs In addition, the possibilities of exporting Indian components in CKD (completely knocked-down) condition are also being explored

GRAMMAR OF PLANNING

A Serealisation 13

The plan monitoring and evaluation

P R Dubhashi

Constant monitoring and evaluation are necessary for successful implementation of plan schemes In fact success of planning depends on scientific formulations, vigorous implementation at the field level, and close and continuous supervision, monitoring, evaluation and modification says the author

PLANNING HAS NO MEANING except in terms of the goods that it is able to deliver Planning is not an end in itself It is a means to an end and the end is the achievement of pre determined goals These goals to start with, are couched in aggregate terms such as increasing gross national products increasing per capita income the distribution of the gross national product in a more equitable manner and the provision of full employment opportunities

However these aggregate national goals have to be disaggregated sectorwise and sub-sectorwise and thus we come at the various physical targets in terms of million tonnes of foodgrains coal or steel or the quantities of cargo or passengers moved by the Railways etc

Organisational machinery

Related to these physical targets are financial allocations However mere financial allocations do not result in physical achievements There has to be the necessary organisation and personnel who could carry out these programmes making best use of financial resources to achieve maximum results Every plan scheme or project must therefore take into account the organisational machinery through which plans and programmes will be implemented If the organisational machinery is adequate, plans have every chance of success

If the plans fail and the planned targets are not achieved, it does not behove the planner to find fault with the implementation machinery A planner cannot quarrel with his tools His plan must take into account the organisational machinery and must ensure that it is adequate to deliver the goods In this sense, planning and implementation are inseparable A plan is as good as the results it is able to accomplish A paper plan is no plan at all A plan which takes care of the efficiency in implementation would be able to accomplish much more than what it seeks to do and it would also be able to accomplish it at the least cost In other words, with the given investment it would achieve more than commensurate results It would be able to bring down the capital output ratio Per unit of investment of capital, it would be able to achieve larger quantity of output

Constant monitoring

Unfortunately, Indian planning has been deficient in this respect all these years The contemplated results are not accomplished in terms of the increase of the national product While we have been aiming at a steady growth rate of five per cent through all our Five Year Plans in actual fact the growth rate has hovered around three per cent Also because of cost escalation and inflation, the physical plan has been generally smaller than the financial plan Because of less than optimum efficiency in the implementation of plan programmes, the capital output ratio has shown a tendency to rise

All this underlines the importance of paying continuous attention to setting up a strong and efficient machinery of implementation of plan schemes and their constant monitoring and evaluation with a view to ensuring satisfactory results These aspects have been

sadly neglected in the past and immediate steps need to be taken up to improve the monitoring of implementation Monitoring should not be confined only to the national level As we go nearer the field, monitoring has to be all the more intensive There should be close and continuous supervision over the actual implementation of plan programmes in the field and their periodic monitoring and evaluation

Real objectives

The monitoring of implementation, however, is not as easy as it looks In the past, monitoring has simply meant checking of expenditure This is not only unsatisfactory but may even be counter-productive Often it results in the rush of expenditure in the closing months of the financial year What is required is monitoring and evaluation with reference to the real objectives of a project and the real objectives are not in either financial terms or even physical terms

The manner in which the results are obtained is also equally important If the results are accomplished by wrong means, there may be a temporary gain but a setback in the long run For example, if the programmes of family planning are implemented through coercion, targets regarding tubectomy or vasectomy may be accomplished But use of coercive methods may create such a strong revulsion against the family planning programme that they would receive a long term set back What is required is the need to educate the target group and solicit their voluntary participation and cooperation This aspect is important in respect of most of our programmes

We often describe planning in India as democratic planning and in democratic planning, voluntary participation of the people is of very great significance Also, what we are seeking to achieve are enduring results and not some short-term physical accomplishments In the hurry to show results these aspects are totally forgotten and in the process, long-range damage is done to institutions and organisations and the morale and motivation of the people

It follows that while data and statistics are important, evaluation and monitoring are not entirely a quantitative process There is also a qualitative process involved A satisfactory system of monitoring and evaluation should take care of the qualitative, no less than the quantitative aspects of the plan implementation

Final objectives

Monitoring and evaluation ought to take care of the 'ultimate' 'penultimate as well as 'instrumental' targets and goals of every plan programme The 'ultimate targets' have to be in terms of the final objectives of a project or scheme—in terms of output generated or employment opportunities created The 'penultimate targets' may have to be one stage before the realisation of the ultimate targets Thus, if the ultimate target is in terms of the millions tonnes of foodgrains produced the 'penultimate targets' may have to be in terms of distribution of seeds, fertilisers and insecticides or utilisation of irrigation potential The 'instrumental target' have to be in terms of the means through which the penultimate and ultimate targets are accomplished Thus they may be in terms of the centres for the distribution of inputs, the personnel incharge of such centres, construction of wells and field channels necessary to create the irrigation potential the field organisation required for discharging this work, etc

One of the defects of our planning is that while ultimate targets are fixed, 'penultimate' and 'instrumental targets' are left vague In the light of our experience of plan implementation in the past, it should be obvious that unless we fix up 'penultimate or instrumental' targets which are consistent with the 'ultimate targets', we cannot realise the plan goal Per contra we cannot stop at fixing the 'penultimate goals Thus increasing area under high-yielding varieties of seeds can only be a penultimate goal The realisation of this penultimate goal would have no meaning unless we are sure at the same time that spread of area under high-yielding varieties also results in increased production of foodgrains or other commercial crops High-yielding varieties of seeds have to be accompanied by increased supply of fertilisers and irrigation water HYV programme has to be a part of a package and where the package is missing, realising the goals regarding only one item does not show results

Plan implementation requires coordination without which programmes may go on in a lopsided fashion and results would not be accomplished Monitoring and evaluation therefore has to take note of the realisation of the ultimate goals or the ultimate impact of planning and cannot stop short of them and remain confined to some instrumental action

Two broad components

Plan programmes can broadly be divided into two components The first relates to those activities where investments are concentrated and the second where these are dispersed Irrigation and hydro-electric projects and establishment of plants and erection of buildings fall in the first category while schemes such as those related to agriculture like agriculture extension or cooperative development or crop production would fall into the second category The success of planning in the first component substantially depends on the organised machinery of government but the success of the schemes falling in the latter component depends as much on people's initiative as on the machinery of government Indeed in respect of these schemes the main role of the machinery of government is to motivate and active millions of farmers on whose efforts depends the accomplishment of goals

Monitoring and evaluation of activities falling in the first category is comparatively much easier than falling

in the revised category. In spite of this, surprisingly enough, evaluation has paid more attention to the latter than to the former. This balance needs to be set right. There has been a lot of schedules slippage in respect of several irrigation and hydro-electric projects and establishment of public enterprises resulting in considerable losses. An evaluation of these projects would have brought out the deficiencies. One of them might well be dispersal of resources over too large a number of projects leading to the delayed completion of several projects. In a hurry to bring in too many projects in the ambit of planning, no more than token provisions are made in respect of several projects which then go on hibernating for any number of years This is hardly a way of optimising plan resources. In fact, it is project planning of this sort that might have led to the increasing capital output ratio which has been a disturbing feature of economic development in our country.

Expansion of the public sector has been an important feature of planning in our country But it is sad to reflect that massive investment in public sector enterprises has not yielded the necessary dividend It is necessary to undertake comprehensive evaluation of the public sector enterprises in order to set right the deficiencies of the past.

Remedial measures.

Evaluation has to go deeper than doing mere cost-benefit analysis It must bring out latent as well as patent deficiencies—deficiencies in organisations, institutions and personnel so that these could be set right For evaluation of this sort, it might well be necessary to follow the case study method to supplement the methods of collection of data en masse and their analysis

While evaluation may require a specialised machinery, monitoring has to be an in built feature of the normal machinery of administration. For every important scheme or enterprises, there should be a review and monitoring committee in every department or organisation of government On this review committee, there should be all persons connected with that particular scheme or enterprise The review committee ought to meet periodically at regular intervals. It should have a regular management information system which would feed the review committee regularly in terms of what have been called the instrumental, penultimate and ultimate targets. The review committee ought to pin-point shortfalls or deficiencies whenever they occur and immediately set about rectifying these deficiencies before any further damage is done An alert machinery for review and monitoring can save much wastage of resources and enable plan progress to be made on the right lines.

Past experience would show that there has been a tendency to make too many changes in the plan schemes These are based more on some snap judgements of people in authority than on the basis of systematic review, monitoring and evaluation It is necessary to avoid unnecessary frequent changes. It must be realised that while policy changes could be made quickly at the headquarters, their communication and implementation in the field necessarily takes a long time Planners and policy makers ought to provide sufficient time to those incharge of implementation to show results. A mere declaration of plan objective or policy is not synonymous with plan implementation.

Success of planning depends on scientific formulations, their disaggregation with reference to local conditions, vigorous implementation at the field level, close and continuous supervision, tight monitoring, expert appraisal and evaluation, and modification and rectification based on such appraisal and evaluation.

In the next issue
The International Planning

Saving 20,000 lives a day

RECENT BREAKTHROUGHS in both scientific knowledge and social organisation have made possible a children's revolution which could save the lives of half the 40,000 children who now die each day and protect the health of many millions more, says the UNICEF State of the World's Children report 1984.

Oral rehydration

Dehydration-caused by diarrhoea—is the world's biggest killer of children (5 million deaths a year) The discovery of oral rehydration therapy (ORT) now makes it possible to save most of those lives by a simple and cheap treatment administered by the parents in the child's own home

Immunisation

Extending immunisation programmes with new vaccines—and educating parents about the need for full protection—could prevent the six main immunisable diseases from killing 5 million children a year and disabling 5 million more

Population

There has never been a steep fall in birth rates which has not been preceded by a steep fall in death rates One reason is that if parents are more confident that their children will survive, then they are more willing to consider family planning So in practice, a revolution in child survival would help to stabilise world population at an earlier time and at a lower level.

Breast-Feeding

The promotion of present-day knowledge about breast-feeding and weaning—and about the dangers of bottle-feeding in poor communities—could save the lives and protect the health of millions of infants.

Growth Monitoring

Growth monitoring using inexpensive modern growth charts can help parents themselves to prevent up to half of the child malnutrition in the developing world. □

You and your health

Medical treatment of coronary artery disease

Prof. M.L. Bhatia

Coronary artery disease is a disease of the heart consequential to disease of the coronary arteries It is an important cause of disability and deaths in India Here the author discusses medical aspects and treatment of angina and heart attack which emanate from disease of the coronary arteries Anginal episode is not life threatening whereas heart attack is a life threatening situation Various do's and dont's including preventive, protective and curative measures have been suggested herein

HEART DISEASE IS an important cause of disability and deaths in our country It is estimated that more than 5 per cent of registered deaths in India are due to heart disease and that 6 43 625 Indians died of heart disease in 1978 The percentage distribution of death is more than that of all categories of cancer, which is 2 5 per cent

Coronary artery disease

Many types of heart disease exist One of these is coronary artery disease, i e disease of the heart consequent to disease of the coronary arteries The conservative estimates of its prevalence in our country in general population above the age of 40 are 2 5 per cent If this is so, then the risk group consists of 136 9 millions, of which 3 42 millions have the disease At the estimated population growth, the number of such persons in 2000 A D will be 10 13 millions—a large number indeed! The number could be much more keeping in view the rapidly increasing number of patients with this disease seen by doctors all over India.

Coronary artery disease is consequent to the disease of the coronary arteries. Coronary arteries are the blood vessels which provide the heart with the oxygen and other nourishment it needs The heart is basically a hollow pump which by its action of contraction and relaxation pumps blood throughout the body providing nourishment to all organs and cells Blood flows out from the heart through the arteries and returns to it through veins As blood leaves the heart, the first artery it passes through is the aorta, and the coronary arteries branch off from it These arteries wrap around the heart and carry blood into every part of the heart muscle

Cause of coronary artery disease

Many diseases affect the coronary arteries Of these atherosclerosis or hardening of the coronary arteries is the commonest cause accounting for more than 90 per cent of coronary artery disease In course of time, fatty materials (specially cholesterol, a waxy looking fat commonly present in animal fats and oils, in yolk of egg and in many other foods) stick to the inside walls of the arteries They may start forming plagues The process starts early in life and progresses slowly over a lifetime When the lumen of the artery becomes significantly narrow (50 per cent or more) by this clogging the flow of blood through the artery is markedly reduced, affecting blood flow to the heart muscle The result is coronary artery diseases

Risk factors

There is still much to learn about the causes of coronary artery disease In other words about the causes of athero-sclerosis, available information suggests that certain factors in a person' background of life style make the likelihood of developing coronary artery disease greater These are called risk factors.

Many such risk factors have been indentified In general it seems that the combination of several risk factors rather than any particular risk factor increases someone's chances of developing coronary artery disease.

Some risk factors cannot be helped, and therefore, cannot change. These are called the unmodifiable risk factors, which include a family history of coronary heart disease, the male sex and age above 40 years More important are the modifiable risk factors which are controllable These often result from one's life style, the things one eats and the things that one does

The important ones of these factors are

* High blood pressure
* Cigarette smoking
* Raised levels of blood cholesterol
* Overweight
* Increased stress and tension in life
* A sedentary life style

Of course not everyone with some or even all these factors will develop coronary artery disease, and some people with coronary artery disease may not have any of these factors In fact only about 50 per cent of the people with coronary artery disease have one or more such risk factors But the risk of developing coronary artery disease is greater if the risk factors are present and the more the risk factors, the greater the risk Combination of risk factors is not simply adding them, it is more like multiplying them

While a lot is known about coronary artery disease and risk factors, even more remains unknown However, there is much evidence that by lowering the risk factors the disease may be kept away from progressing These are the precautions one can take, which will make a difference

Manifestation of coronary artery disease

Coronary artery disease affects a person in many ways There is no standard set of presentation of CA for every petient However, the usual ways in which its presence is felt are

* Angina
* Heart attack (myocardial infarction)
* Irregularity of the heart
* Heart failure
* Sudden death

The topic of heart attack has been discussed in one of the earlier issues in this series Now we discuss the other important aspect of this serious heart disease-angina or, as it is medically called, angina pectoris

Angina

Angina is one of the several possible results of coronary artery disease It is the name given to the discomfort which results when the heart muscle temporarily does not get enough blood and oxygen, when the supply of blood and oxygen are not adequate to the heart muscle's requirement. This discomfort is the heart's "distress signal"

Presentation of angina

Anginal discomfort is often called 'pain' but it may be felt differently by different persons It may thus be felt as a mild discomfort, a dull ache in the chest or something else entirely like extreme tiredness, indigestion, burning, squeezing heaviness, fullness, or tightness in the chest, upper stomach or throat, or as heaviness and a sensation of weight in the arms, specially in the left It is described by some as a choking sensation, shortness of breath or pain in jaw, gums, teeth, throat or in the neck between the shoulders

The location of the anginal discomfort and its severity also varies from person to person It may be occur in one or several places It may start at one location and travel to others The anginal episode is generally short, lasting for 2 to 5 minutes Its frequency may vary from once in several weeks to many attacks per day

The types of activities which bring an angina attack vary from person to person Most of these activities make the heart work harder (increasing heart rate and blood pressure), and thereby increase its requirements of blood supply which cannot be met because of restricted blood flow through the clogged arteries

Some common activities which may present angina are

* Excercise or exertion
* Heavy meals
* Walking uphill or up a staircase or walking in cold weather or against a strong cold wind
* Stress, fight, anger and other emotional conditions
* Sexual intercourse
* Being in a higher altitude

"Angina" and "heart attack" are different

Angina and heart attack are not the same thing although the underlying cause, viz disease of the coronary arteries, is common to both Angina is caused by a temporary reduction in the amount of blood and oxygen that reaches the heart, most commonly due to narrowed coronary artery An anginal episode is not life threatening and it does not permanently damage some part of the heart muscle

On the other hand, a heart attack results from a complete or almost complete deprivation of blood and oxygen supply to a part of the heart for a long period (generally for more than 30 minutes) After

this period the stoppage is complete and sustained. The part of heart muscle so affected dies, and is later replaced by scar tissue. A heart attack is a 'life threatening' situation.

Diagnosing angina and coronary artery disease

It is common to begin with a history of the symptoms and then perform a physical examination The history provides the most useful information and helps not only in diagnosis but also the identification of its severity, degree or incapacity suffered, other disease factors present etc Such a history includes not only the patient's problems but also a detailed family history Physical examination is detailed and includes checking of weight, blood pressure, pulse, listening to the heart and lungs etc to determine the state of general health and signs of heart disease and its complications.

Diagnosis also includes conducting several tests These include a blood sample analysis for blood sugar cholesterol and other chemicals, an X-ray of the chest for ascertaining heart size, a resting electrocardiogram and an exercise ECG The last is of special importance in diagnosing heart disease including coronary artery disease

An exercise ECG shows how the heart reacts to exercise In many persons with angina the resting ECG may not show any change, but specific changes become manifest in the exercise EGC Analysis of these changes and the degree of exercise intolerance is very useful in diagnosing and quantifying the severity of coronary artery disease

Radiosotope scanning of the heart shows how much blood does the heart pump with each heart beat and also the size shape and contraction of the heart It may show specific areas of decreased blood flow due to coronary artery disease

Cardiac cotheterisation and coronary angiography provide a precise indication of how well the heart is functioning and pinpoint the arteries which are narrowed the degree of such narrowing and the site of the blocks This test is always done before a surgical procedure like bypass surgery is taken up

Medical treatment of coronary disease

(i) Control risk factors :

Control of risk factors is essential The high blood pressure must be controlled by drugs or without drugs, as required Changes in life style and dietary changes are helpful, like cutting down on the salt consumption in the diet and losing weight if the person is overweight Cigarette smoking is specially harmful Not only it is an important coronary risk factor, but also the smoking may precipitate or worsen angina, cause irregular heart beats and reduce chances of recovery after a heart attack Stopping cigarette smoking can repair some of this damage. It is never too late to give up smoking. It should also be noted that no cigarette is safe.

(ii) Dietary Control :

Adequate dietary control should be exercised regarding calories, the quantity and quality of fats and salt intake To avoid too much fat and cholesterol it is necessary to eat lean meat, fish and poultry, reduce the amount of eggs and organs meats like liver and limit use of butter, cream and other saturated fats Fried food should be limited or avoided Extra salt on the table should not be used Losing weight is beneficial and can be achieved by controlling diet and judicious amount of exercise. Exercise increases the capacity of doing physical work with lesser degree of circulatory stress and strain, it increases physical stamina The amount and type of exercise required varies from one person to another and is best prescribed by your doctor

(iii) Controlling stress :

Control and reduction of stress is necessary Adopting a simpler life style taking a weekend off regular vacations, more time for fun and recreation pursuing active hobbies, relaxation exercises, Yoga transcendental meditation, etc, which help in physical and mental relaxation are extremely beneficial

(iv) Drug treatment :

Drugs are often required for treatment of CAD condition For short term and immediate benefit nitrates like nitroglycerin are used under the prescription and advice of the doctor For long term benefit, the drugs like beta blockers or calcium blocking drugs are currently used The need for these drugs and the quantity required varies from patient to patient which can be best decided by your doctor It is important that you follow the prescribed regimen—When and how much It may also be necessary to develop a schedule if many drugs are used so that you are not confused and do not miss the drugs

Surgery for coronary artery disease, specially for angina

Treatment for angina aims at improving blood supply to the heart muscle Usually these goals are met through medications and changes in life style But if these do not help and angina continues to interfere with everyday life, surgical treatment is to be considered and the result may be quite satisfactory The possibility of surgery depends upon several factors including the overall condition of the heart □

(Based on public lectures of All India Institute of Medical Sciences, New Delhi).

Correction

In Yojana September 1-15, 1984 issue, on page 23, in the article "Towards Self-reliance in mining machinery", the correct name of the second author is P. N Shall and not P. N Sahi as printed.

Editor

Plan to settle 25,000 shifting cultivator families

TWENTY FIVE THOUSAND shifting cultivator families are proposed to be resettled during the Seventh Five-Year Plan at an estimated expenditure of Rs 75 crores

Shifting cultivation or Jhum is prevalent in 233 Blocks of 60 districts in 13 States and two Union Territories To deal with the problem of shifting cultivation a Central Sector Scheme was introduced in 1977-78 in Orissa the North-Eastern States and the Union Territories of Arunachal Pradesh and Mizoram with 100 per cent Central assistance Later in 1979-80 the scheme was transferred to the State sector on the recommendation of the National Development Council The scheme however continued in Arunachal Pradesh and Mizoram

According to the Task Force on Shifting Cultivation report submitted in 1983 shifting cultivation is practised in 4 33 million hectares of land and about 6 22 lakh families go in for this practice covering an area of about 1 million hectares annually The Task Force had recommended that the scheme for the control of shifting cultivation should be revived in all the concerned States and an investment up to Rs 30 000 per Jhumia family could be undertaken The Task Force had also suggested a programme for the resettlement of 16 000 Jhumia families at a cost of Rs 50 crore during the Seventh Plan which was endorsed by the Board on Shifting Cultivation at the instance of the Committee of Ministers for Economic Development of the North-Eastern Region An outlay of Rs 75 crore to resettle 25 000 shifting cultivators has been recommended for the Seventh Plan

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Oil industry takes massive strides

THE PETROLEUM INDUSTRY in the country has taken massive strides during the Sixth Five Year Plan with crude oil production pushed by more than 150 per cent and the natural gas production increased by over 100 per cent

In 1979-80, the indigenous crude production was 11 8 million tonnes which steadily increased to 16 2 million tonnes in 1981-82, 21 1 million tonnes in 1982-83 and 26 million tonnes in 1983-84 By the end of 1984-85 the domestic crude production is expected to reach 29 6 million tonnes

Similarly the production of natural gas increased from 2 0 billion cubic metres in 1979-80 to about six billion cubic metres in 1983-84 The production of natural gas was expected to go up further in the concluding year of the Sixth Plan

With rising cost of importing oil and tight supply conditions in the world market during 1979-80 the Sixth Plan laid great emphasis on accelerating the programme of oil exploration and development in the country The wide variety of efforts during the last four to five years have led to augmentation of the initial geological reserves of crude oil from 2340 million tonnes on January 1 1980 to 3000 million tonnes on January 1 1984 The recoverable reserves of crude oil have increased during this period from 366 million tonnes to 511 million tonnes

The initial geological gas reserves have also increased from 826 billion cubic metres to 1006 billion cubic metres and the recoverable gas reserves have gone up from 352 billion cubic metres to 478 billion cubic metres during the four-year period beginning January 1, 1980

Exploration efforts of the Oil and Natural Gas Commission have led to discovery of hydrocarbons bearing structures in various parts of Gujarat Rajasthan Assam, Andhra Pradesh, Nagaland and Tripura and also in the offshore areas west of Bombay and off the Godavari coast Similar structures were also located at Portonovo in the Cauvery basin and the Palk Bay

The strides taken by the oil industry have led to a great degree of self-reliance At the beginning of the Sixth Plan, the total crude oil requirements were of the order of 33 million tonnes necessitating imports of about 21 million tonnes By the end of the current plan period, with 29 to 30 million tonnes of indigenous crude oil production, the degree of self-reliance will be as high as 70 per cent with total imports of crude reduced to a little over seven million tonnes The imports of petroleum products are expected to be under five million tonnes by the end of 1984-85

The refinery capacity expansion has kept pace with the demand for petroleum products At the beginning of the Sixth Plan II operating refineries had a total capacity of 31 80 million tonnes which increased to 37.80 million tonnes with the commissioning of Mathura Refinery in early 1982 The programme for expanding refinery capacity by another 7 75 million tonnes along with setting up of secondary processing facilities now under implementation would further raise the refinery capacity to 45 5 million tonnes by the end of 1984-85

In addition, plans are underway to set up two new refineries each of six million tonnes per year capacity—one near Karnal in North-West and the other near Bangalore on West Coast □

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Income inequality and socialism

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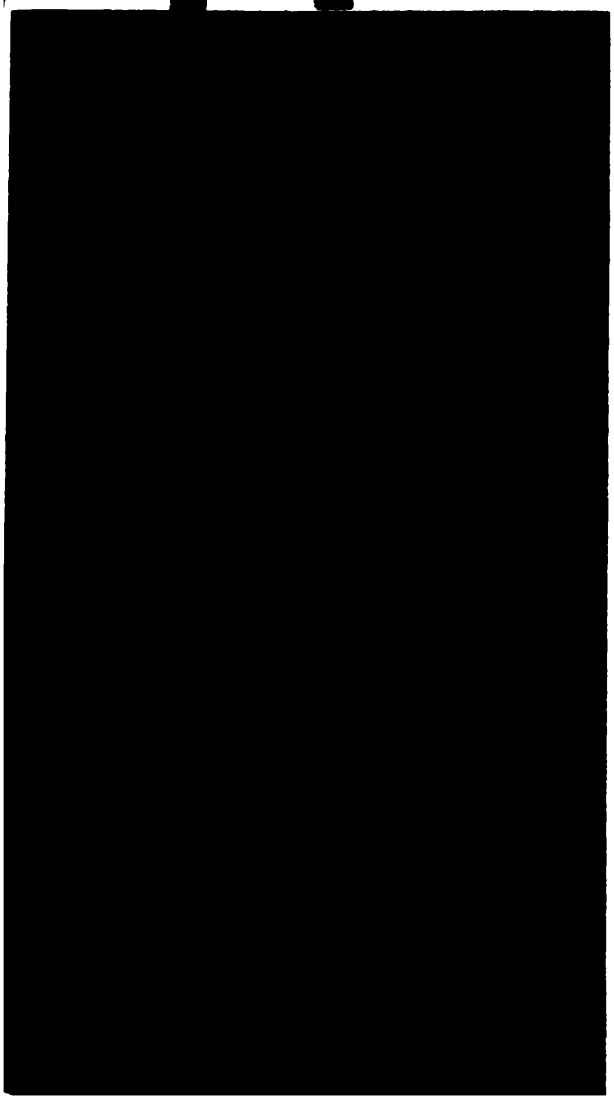

Human resource development

NEXT ISSUE

Chemicals—friend or foe?

Export of marine products during April-December 1984

ACCORDING TO PROVISIONAL export figures available with the Ministry of Commerce 59,500 tonnes of marine products valued at Rs 275 31 crores were exported during the period April—December, 1984 The present tempo of export of products in this field indicated that the export target of 93 800 tonnes of marine products worth Rs 400 crores for the year 1984-85 would be achieved

There has been a steady increase of exports of marine products since the beginning of the Sixth Plan Beginning with an export figure of Rs 234 84 crores worth of marine products in 1980-81, the figure swelled to Rs 373 02 crores during 1983-84 and is likely to touch Rs 400 crores in the current year

Among the main items exported are frozen shrimps which in terms of value comprised 84 per cent and in terms of quantity 59 per cent of the total exports of marine products during 1983-84 when 54,444 tonnes of frozen shrimps valued at Rs 314 81 crores were exported Export of fresh frozen fish was next with 22 573 tonnes worth Rs 29 10 crores In the current year as well, export of shrimps accounts for the major portion of exports with 39 500 tonnes of frozen shrimps valued at Rs 240 95 crores having been exported during the period April—December 1984

Besides shrimps and prawn frozen lobster tails frozen froglegs frozen cuttlefish & fillets, frozen squids, canned shrimp dried fish dried shrimp shark fins & fish maws also find markets outside the country

Major export markets are Japan and the U S A, which account for 64 40 per cent and 13 35 per cent respectively of our exports of marine products in terms of value of exports. The third largest market is U K , which has a 5 5 per cent share Other buyers accounting for less than 3 per cent each of our exports in this field are Singapore United Arab Emirates, Kuwait Netherlands, Taiwan France and Sri Lanka

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Human resource development

R. Venkataraman

Calling for mobilization of a sound human resource development as a strategy for all round economic development in the Seventh Plan, the author suggests total development of an individual in society in relation to his or her social, cultural and political manifestation and aspirations Besides, traditional skills of the rural artisans needed to be modernised to accelerate the pace of productivity and growth

HUMAN RESOURCES ARE perhaps the most strategic and critical determinant of growth, and yet its development has not received the required attention Even though a country may possess abundant physical resources it cannot make rapid economic and social advancement unless there are people who are enterprising and have developed necessary skills and attitudes Human effort is required to mobilise, organise and use these resources effectively and efficiently, towards the production of the required goods and services We have examples of countries who have hardly any natural and physical resources, yet they have achieved tremendous economic growth Japan is perhaps the most notable example in this regard On the other hand, we have countries and states which have large natural resources but have not been able to exploit them effectively and they continue to lag behind in economic development Within India, the economic development of some of the states, notwithstanding their abundant material resources, has been very slow while a few other states with far less natural endowments have achieved remarkable progress The difference is primarily due to the human factor

The knowledge, skills attitudes and the initiative of the people can contribute greatly towards the economic development of region, state or a country And the human resources development would involve upgrading these qualities of the people The investment in human resources had directly contributed to the economic development and growth by promoting knowledge and application of science and technology to production processes, by developing innovations and research, by training the workers in different technical skills and by building up the right type of attitudes values and interests

Human resources help development

The qualitative aspects of human resources in the country leave much to be desired On the one hand, there is rapid quantitative addition in population and on the other there is widespread poverty, illiteracy, unemployment and under-employment, low standards of living and low per capita productivity The socio-economic structures institutions and organisations have hampered full development of the human resources, have led to unequal distribution of income and wealth and appear to be unsuitable or the rapidly changing socio-economic situations The heavy burden of population can be mitigated and channelled towards economic development only by appropriate education, training and inculcating proper values and attitudes

Viewed in this context, I feel that this convention can make valuable contribution to the Seventh Plan, which is about to be launched in a few months time, by discussing and suggesting concrete measures for human resources development I find that you are going to concentrate on all the three important segments of the economy, namely, Rural Development,

*Inaugural speech made at the National Conference on Human Resources Development and the Seventh Plan, January 19, 1985, New Delhi

ndustry and Infrastructures and Services Your focus on growth with social justice, technology upgradation, and quality and productivity is in tune with the Seventh Plan objective which, as you are perhaps aware, include food, work and productivity

Impediments to development

The scale of economic transformation and the speed with which it has to be brought about makes it imperative that maximum utilisation is made of the human resources in all spheres Widespread poverty, economic stagnation and social backwardness are perhaps a reflection of the multitude of deficiencies in the social and economic structure in the country I shall mention some of our deficiencies in order to highlight the problem facing us The techniques of production are often outmoded and the infrastructure facilities inadequate, the supply of capital in relation to the available supply of labour is extremely scarce, the social services like health education are well below the needs, integrated and efficient markets do not exist, there is a dearth of skills and of entrepreneurial and organisational capabilities, the institutional framework is generally ill-adapted to the needs of modern economy, and above all the population is growing rapidly Considering this scenario, it is obvious that a gigantic effort for the development of human resources is called for to overcome the impediments mentioned earlier and to build a prosperous dynamic society

Training methodology needs change

Training for the industrial employment is multi-faceted Craftsmen like fitters, turners, machinist, welders etc, supervisors who can lead the workmen into realms of improved efficiency and productivity the engineers who design equipments and the research scientists and technologists who can do innovative work on existing technologies or new ones need to be trained in their respective fields The existing institutions, like Industries Training Institutes, Polytechnics and Engineering Colleges and Institutes of higher technology have to be geared to the needs of the Seventh Plan and a hard look at their existing methods has to be taken

Traditional skills such as masonry, pottery, carpentry and smithy which afford bulk of rural employment have to be modernised and training should be devised to suit the local conditions The massive under-employment in our rural areas can be buckled only by training the rural folk in part or whole-time self employment schemes

A large number of para-medical personnel will be needed to implement our Seventh Plan scheme of Medical hygienic and family welfare services That our phenomenal economic development has been nullified by the growth of population, though obvious, bears repetition Motivated social workers may be trained in this field so that the problem of poverty may be tackled at the root

Call for betterment of individual

Economic growth is only one aspect of the human resources development The fact that economically advanced countries show signs of ecological imbalance, social tensions, alienation of workers and distance between man to man, indicates that in addition to the economic development, the human resources development must be undertaken for the betterment of the individual in the society The recent emphasis on behavioural aspects and techniques reflects the concern over counter-productive behaviour and decrease in motivation The psychologists have identified the basic human needs and the satisfaction which the employees get when these needs are met They all give the highest priority to the sense of fulfilment among human aspirations with the economic advancement, this desire for self-fulfilment rapidly rises The strategy for the development of human resources should take care of all these

It is being increasingly recognised that the real difference between one society or organisation and the other depends on the quality of its people, their motivation, satisfaction and productivity Of late, the satisfaction that comes from the job seems to be dwindling The employee works in an environment that is more and more de-humanised and soul killing, he works in greater masses and his feeling of alienation and frustration is becoming acute These days people, particularly the young, seem more interested in choosing a life style before a career or a job It is essential that the management of organisations meet these problems with skill and understanding not only for the sake of institutional efficiency but also for social health Organisations would continually need to re-adjust policies and practices to make them consistent with the life styles and changing interests of their members This explains why the concepts of democratisation of the work organisation and participation of workers in decision making are gaining wider acceptance in today's environment

Should human resources development, therefore, be considered as a narrow concept covering only the development of technical skills of an individual in purely economic terms or should it be his or her total development, covering all aspects? Should it not attempt to meet the individual's needs for social, cultural and political development?

As this Convention is primarily of the trainers, it appears natural that the focus of the discussion will be on training and development as distinct from the education, the difference often treated as that between acquiring skills and acquiring knowledge Perhaps, the requirements of education for developing the human resources may be the concern of some other forum but the intimate relationship between the education and the training for developing the individual should not be ignored

(*Continued on page* 32)

Why this gloom over railways' finances

Mohammed Jafa

Railways is the largest and basic transport undertaking in the country and also the largest public sector undertaking. But the financial picture of the Railways is one of unrelieved gloom The author cautions that this should be of major concern to the planners.

Transportation is sine qua non for any scheme of economic development The Railways play a dominant role in the transportation system by carrying the largest amount of goods and passengers traffic in the country They are more particularly suitable for carrying bulk commodities over long distances They are the country's largest public utility undertaking The capital-at-charge wholly advanced to the Railways by the General Exchequer in 1984-85 has been estimated at Rs 8,425 76 crore Therefore, the main brunt of economic activity quite naturally falls on them.

However, if the railway system has to fulfil its basic role of supporting agricultural and industrial activity, internal trade, commerce and an expanding export trade, etc, a fair return on the capital invested is indispensable for its own efficient and economic working.

Tremendous growth

The thirty four years period ending with the financial year 1984-85, witnessed widely fluctuating fortunes of Indian Railways The five yearly traffic receipts which stood at Rs 1,439 78 crore at the end of the First Plan, are likely to rise to Rs 21,162 44 crores at the end of VI Plan in March 1985 The total receipts in the VI Plan are, therefore, to be about 15 times higher than what they were in the First Plan A against this, the working expenses including miscellaneous expenditure and the provision for depreciation are expected to go up to Rs 19,413 10 crore from 1,199 53 crore, signifying sixteen times growth during the same period Thus, it may be inferred that the traffic receipts are not keeping pace with the growth in working expenses resulting into a continued short fall in railway earnings

This trend is revealed by a comparative study o the gross traffic receipts and the total working expenses of the successive Five Year Plans also During the course of the Second Plan the working expense increased by about 39 per cent against an increase o about 75 per cent in the gross traffic receipts over the corresponding figures of the First Plan The Third Five Year Plan accounted for an increase of more than 48 per cent in working expenses against an increase of about 55 per cent in the gross traffic receipt of the previous Plan

The ad hocism in planning proved suicidal fo Indian Railways The growth of about 43 per cent i working expenses outstripped the 34 per cent increas in the gross traffic receipts The Fourth Plan with a increase of more than 32 per cent in the workin expenses against an increase of about 29 per cent i traffic earnings also witnessed this trend The averag increase in the six years from 1974-75 to 1979-8 including the duration of the Fifth Plan was abou 89 per cent in working expenses and an increase o about 86 per cent in traffic receipts

The Sixth Five Year Plan ending in March 198 is expected to end with a 100 per cent increase in th working expenses against a 113 per cent rise in th total traffic receipts of Indian Railways. Whether thi optimism comes true or not, will be known only o the presentation of next budgets This optimism i

not likely to materialise if we consider the Budget and the Revised Estimates for the year 1983-84 when in February 1984 the Minister of Railways scaled down the assessment of traffic earnings and revised upward the working expenses and anticipated a heavy shortfall in railway earnings, turning a surplus budget into a deficit one.

Overall working results

The Railways' resource generation (net receipts gross of depreciation provision) amounted to Rs 10,698.71 crores during the period under discussion. To this may be added Rs 495 89 crores for the net interest on Railways' fund balances Out of this, an amount of Rs. 5,261 00 crores was contributed to Depreciation Reserve Fund, leaving a surplus of Rs 5,437 71 crores

Since the statutory liability of the Railways for the payment of Dividend to General Revenues, including payment to States in lieu of Passenger Fare Tax, etc, amounted to Rs 5,515 79 crores during the same period, their actual contribution fell short by Rs 78 08 crores This was met by temporary borrowings from the General Revenues till 1977-78 However, beginning from 1978-79, the shortfall, as per recommendation of the Railway Convention Committee, 1977, is transferred to Deferred Dividend Liability Account

The unsatisfactory state of Railway finances, stemming largely from persistent rise in wages and fuel prices, was accompanied by a slow-down in the rate of industrial expansion. The staff costs, claiming more than 60 per cent of the ordinary working expenses, has been continuously rising due to increases in Dearness Allowance, Interim Reliefs recommended by the successive Pay Commissions, enhancement in the rate of running allowances, night duty allowance, city compensatory allowance, and the award of the Railway Labour Tribunal, etc

Table I given below depicts the index of the effect of increase in the average cost per employee which has a direct bearing on the running of Railways and the percentage increase in average rate realised per passenger and tonne kilometre

Table I

Increase in Fares, Freight and Lbour Cost (1951-52 to 1982-83)

(1950-51 = 100)

Average Cost per Employee	858 7
Average Revenue per Passenger Kilometre	345 9
Average Revenue per net tonne Kilometre	541 1

Thus, while the labour cost increased by about 759 per cent over the period, the unit earnings went up by about 246 per cent to 441 per cent during the same period These comparative rates of wages and similar increases in other input prices on the one hand, and unit earnings from passengers and goods traffic on the other, give an idea of the wide gap between the increase in the prices charged and the costs of operation of railway services. In fact, the gap between the average earnings from passengers and goods traffic and the mounting costs of inputs including wages, has been continuously widening due to their pursuing the policy of price restraint during inflation under public utility obligations

Their responsibility

As the largest public utility enterprise, the Railways are charged with the responsibility of providing cheap and efficient transportation service to the nation They have to open new railway lines in backward areas to facilitate development They have to charge concessional freight rates for certain essential commodities and mass consumption goods which affect the general cost of living, such as foodgrains, and certain industrial inputs like coal, etc, which have a low unit value

The freight rate structure has progressively been made cost oriented to bring it nearer to the estimated cost of operation Nevertheless, even after substantial increases in freight charges in recent years, narrowing down the gap between the freight rates and the cost of service, a large number of essential commodities have still remained untouched Certain commodities like coal, foodgrains, iron ore, bamboos, firewood, fruits and vegetables, sugar-cane, molasses and oil cake, etc., which are officially described as 'low-rated', do not all cover their cost of haulage, while some others are uneconomical to be carried beyond certain distances on one or the other gauges or both Examples of such commodities on Broad Gauge are bone meal, cement sheets, edible oils, groundnut oil, salt, timber logs, manganese ore and cotton raw pressed, etc On the Metre Gauge these commodities include command refractory bricks, cement sheets, limestone and dolomite, sand, soda ash, sugar, tea, petroleum coke, diesel oil, kerosene oil and liquid fuel, etc.

Furthermore, Railways' social burdens increase due to

(i) Losses on suburban passenger services particularly in and around the metropolitan cities of Bombay, Calcutta and Madras

(ii) Uneconomic branch lines, which are not commercially viable due to low traffic density but which can not be closed due to public pressure

(iii) Concessions granted on social grounds to passengers, e.g., students, blind persons, tubercular patients, etc

(iv) Free carriage of goods moved on behalf of certain institutions like Red Cross, etc.

(v) Freight concessions in case of exports, and relief measures during natural calamities like droughts and floods, etc

(vi) The expenditure on Railway Protection Force and the police deployed by State Governments on 'Order' duties

The financial implication of the various 'social burdens' has been estimated at around Rs. 200 crores per annum, which means that the railways would have suffered losses to the tune of Rs. 6,800 crore during the thirtyfour years period under review. To put it differently, the transfer of resources from the Railways to the general economy should be taken as increased by this amount.

In a sense, the social obligations placed on the Railways have landed them in a financial mess, otherwise, they would have generated a net surplus of about Rs 7,722 crore after providing for the total deficit of Rs 7808 crore The public utility obligations placed on the Railways not only involve losses to them but also curtail their commercial freedom making their survival difficult as a commercial enterprise

The Railways are also distinguished as the largest nationalised undertaking employing the largest work force As a model employer, they have to set an example of good industrial relations by offering larger monetary and non-monetary benefits to their employees, e g, health and medical services for staff and their families including pensioners, subsidised housing, educational assistance and facilities, holiday homes and canteens, etc

Dividend to General Revenues

Almost the whole of the capital invested on Indian Railways is treated as loan capital borrowed from General Revenues and the Railways are called upon to pay dividend at a rate which is periodically decided by the Railway Convention Committees of Parliament The rate of dividend, as reviewed by the Parliamentary Committees in 1949, 1954, 1960, 1965, 1971, 1973, 1977 and 1980, is given in Table II

Table II

Rates of annual dividend payable to the General Revenues and the share of States in lieu of Tax on Railway passenger fares
(1950-51 to 1984-85)

Years	Normal Dividend	Additional for States
1950-51 to 1960-61	4 00%	Nil
1961-62 & 1962-63	4 50%	Rs. 12 50 crores
1963-64	4 50%	Rs 12 50 crores
1964-65		
On Capital invested upto March 31, 1964	4 50%	Rs 12 50 crores
On Fresh Capital thereafter	5 75%	Nil
1965-66 to 1979-80		
On Capital invested upto March 31, 1964	4 50%	1% of the capital as on 31-3-1964
On subsequent capital	6 00%	Nil
1980-81 to 1984-85		
On capital upto 31-3-80	4 50%	1 5% of the capital as on 31-3-84
On Fresh capital	6 50%	Nil

Source Compiled by the author from different sources

The Railway Convention Committees appointed in 1949 and 1954 covered the period of the First and Second Five Year Plans respectively and recommended an annual dividend at the rate of 4 per cent of the capital-at-charge in the respective years.

The period of the Third Five Year Plan was covered by the Railway Convention Committee of 1960 Besides recommending different rates for different years the Committee, from 1964-65 introduced a two rate system for the payment of annual dividend to the General Revenues which has been adopted by the successive Convention Committees also Upto 1960-6 the Union Government under Article 269(1)(d) of the Constitution levied a tax on passenger fares which was abolished on April 1, 1961 in accordance with the recommendations of the Railway Convention Committee, 1960 and to compensate the States for the resultant loss of revenue the Railways agreed to pay an additional amount of Rs 12 50 crores per year alongwith the normal dividend This extra payment represented the average of the actual collection during the years 1958-59 and 1959-60

The Railway Convention Committee appointed by Parliament in 1965 was meant to govern the financial relationship between the Railways and the General Exchequer during the Fourth Plan period then envisaged to run from 1966-71 As the commencement of the IV Plan was later shifted to 1969-7 it was decided that a fresh Convention Committee should be framed for the revised Fourth Plan period (1969-74) The 1965 Convention Committee thus covered only three interPlan years, viz, 1966-67 1967-68 and 1968-69

The Convention Committee suggested that as regards payment in lieu of Passenger Fare Tax instead of a fixed sum of Rs 12.50 crore per year as prevailing at that time, an additional 1 per cent of the capital invested upto March 31, 1964 should paid to the General Revenues Out of this, a sum Rs 16 25 crore should be passed on to the States as payment in lieu of Passenger Fare Tax and the balance utilised to assist the State Governments (in the same proportion as the shares of the Passenger Fare Tax) to provide their portion of the resources required for financing Safety Works such as manned level crossings, over-bridges and under-bridges Dividend at the rate of 6 per cent per annum was recommended on the subsequent capital borrowed from the General Revenues

To review the rate of dividend payable to the General Revenues during the Fourth Plan period Convention Committee was appointed in August 1971 The Committee's final report submitted in April 1973, was approved by Parliament in May 1973 The recommendations followed the 1965 Convention with some important modifications The Committee retained the provision for payment of dividend at 5.5 per cent on the capital-at-charge up

1st March, 1964 (inclusive of 1 per cent to be paid to the States in lieu of Passenger Fare Tax, etc.) and 6 per cent on the fresh capital invested on the railways.

However, reliefs (estimated at Rs. 101.72 crore) were given in the payment of dividend by exempting certain unproductive elements of capital, the capital-charge of new lines, and a part (25 per cent) of the capital outlay in a year on works-in-progress The reliefs for the years 1969-70 and 1970-71 were approved by Parliament in May, 1973, with retrospective effect As the working results of these two years had shown deficits, the Railways had to take loans amounting to Rs 33 78 crores from the General Revenues for meeting the dividend liability for these two years

The arrears of relief available for these two years aggregating to Rs 36 29 crore were utilised in the year 1972-73 (in accordance with the recommendations of the Convention of 1971) to discharge the entire outstanding loan liability in the Revenue Reserve Fund as at the beginning of 1972-73 (Rs 19 57 crore) and part of the loan liability in respect of Development Fund (Rs 16 72 crore) During 1971-72 and 1972-73 the dividend obligations could be met in full (due to these reliefs) besides repayment of the instalment due in 1971-72 for the loans taken from the Revenue Reserve Fund earlier However, a loan of Rs 99 72 crore from the General Reserves had to be taken in the year 1973-74 to meet the dividend liability in full

Railway Convention Committee, 1973, the Sixth since Independence, was set up by Parliament in May, 1973 to review, inter alia, the rate of dividend payable to the General Revenues during the Fifth Plan period (1974-79) The Committee did not suggest any change in the payment of dividend but the relief in respect of the capital outlay on works-in-progress was doubled and was made 50 per cent The Fifth Plan was terminated in 1977-78 and the recommendations of the Convention Committee, 1977, covered only the two inter Plan years, i e , 1978-79 & 1979-80

The Railway Convention Committee, 1980, which was set up in October, 1980, for the duration of the VI Plan, have in their 7th Report, recommended the following for the period 1980-84 as an interim measure —

(i) A rate of 6 per cent on capital invested upto 31st March, 1980 (inclusive of 1 5 per cent on capital invested upto 31-3-64 for payment to States in lieu of Passenger Fare Tax, etc.) and 6.5 per cent on capital invested thereafter

(ii) Increase in payment to States from 1 per cent to 1.5 per cent on the capital invested upto March 31, 1964, out of which Rs 23 12 crore may be passed on to the States in lieu of Passenger Fare Tax and the balance utilised to assist the States to meet their share of the cost of safety works.

(iii) Continuance of existing dividend reliefs and other equitable concessions and in addition the entire capital (instead of 50 per cent thereof) on the ore line (Sambalpur-Titagarh) be exempted from payment of dividend subject to usual conditions

The dividend liability to General Revenues for 1984-85 is estimated at Rs. 490.00 crore involving an increase of Rs. 40 crores over the Revised Estimates for 1983-84 of Rs. 450 00 crore. The increase is mainly due to anticipated increase in capital-at-charge of the Railways during the year.

Contribution

The rate of dividend, as discussed above, is, however, slightly higher than the average borrowing rate of the Government and as such includes an element of contribution The adoption of a little higher rate of dividend on capital investment on the Railways which includes an element of contribution to General Revenues over and above the bare interest paid by the Government on this capital, has been favoured by successive Convention Committees from 1949 onwards due to historical reasons Other possible alternatives, such as the Railways paying —

(i) the bare interest paid by the Government on the capital provided for the Railways plus

(ii) either a share of the profits of the Railways, or alternatively Income Tax on the profits of the Railways have been considered in the past and rejected All the Convention Committees since Independence were of the view that there was a distinct advantage in assuring to General Revenues a definite, regular and predictable contribution from the Railways, year after year, leaving the Railways a degree of flexibility in the internal administration of their finances These twin considerations for which the Railway finances were separated from General Finances in 1924-25 still remain valid, although the quantum of Railways' contribution to General Revenues is now of relatively of less importance in relation to the overall size of the General Budget

In relation to the magnitude of the capital structure, these modest extra payments to the General Revenues can not be considered to be an undue burden on the Railways However, considering the progressive increase in the amount payable as dividend, it is necessary to keep down the capital investment in future Traffic has not built up to the expected levels and further requirements of extra capacity, envisaged in the Seventh Five Year Plan to deal with the question of accessibility and opening of new areas for development, should be met by better utilisation of the existing assets to the extent possible, with capital investment

(Continued on page 34)

How economy performed under Mrs. Indira Gandhi

R. K. Sinha

Here the author surveys briefly, with facts and figures, the economic performance of India during the stewardship of Mrs. Indira Gandhi as Prime Minister of the country and says she steered the Indian economy successfully from crisis to crisis Failure of public sector, increasing unemployment, black money, smuggling and the mounting corruption were some of her debits, he adds.

THE ASSASSINATION of Mrs Indira Gandhi on October 31, 1984 marks the end of an eventful epoch With a brief interval of little less than three years, she dominated the Indian scene for nearly two decades She was a woman of destiny, widely known for her indomitable courage, determination and unity Few effective heads of government in democratic countries remained continuously in power for such a long period. An enquiry into the impact she made on the Indian economy and her unfinished task is, therefore, both natural and fruitful and hence called for

Broadcasting over All India Radio on August 7, 1966 she summed up the economic tasks of her Government in the following words :

> "We hope within the next ten years to attain a stage of self-generating, self-reliant growth. This means that we shall be able continuously to raise production in farm and factory, to step up exports and improve efficiency and productivity all round without recourse to fresh assistance beyond the next decade Most of the goods which our economy requires will be produced within the country Those which we cannot produce or which we find economically advantageous to import will be imported by using foreign exchange earned from larger and growing exports Thus self-reliance will not mean a narrow concept of self-sufficiency It will however very clearly mean an all-pervasive spirit of swadeshi in which Indian produced goods, Indian engineered projects, Indian designed machines Indian invented techniques and scientists would not only dominate the scene but enjoy reputation and regard"

Planning for orderly progress

To fulfill these tasks like her father she was also firm believer in the process of planning. She considered each Five Year Plan as another mile-stone in our long and arduous journey towards a better life for our people In her signed preface to the Fourth Five Year Plan, the plan which was prepared under her leadership and direction, she emphatically asserted that "the benefits of development should accrue in increasing measure to the common man and the weaker sections of society, so that the forces of production can be fully unleased. A reorientation of our socio-economic institutions in this spirit is accorded a first priority"

TABLE-I

Major Economic Indicators

		Base/Units	1950-51	1965-66	1968-69	1976-77	1979-80	1984-85
1		2	3	4	5	6	7	8
	National Income Aggregate	1950-51=100	100	162 0	182 4	240 7	259 9	335 8
	Percapita	1950-51=100	100	119 9	126 4	139 4	141 1	163 3
	Gross Domestic Capital formation	Rs crores at current prices	954	4,390	5,113	16,596	25,419	39,580
	B as % of GNP	%	10 0	18 3	15 5	20 7	23 7	24 1
	Gross Domestic Savings	Rs crores	975	3 791	4,697	17 905	24 839	36,670
	C as % of GNP	%	10 3	15 9	14 2	22 4	23 2	22 3
D	Employment in organised sector	in Lakh		161 92	166 25	206 33	223 05	239 55
E	Agriculture Net sown area	Mil hect	118 8	136 2	137 3	140 2	139 0	142 0
	Net Irrigated area	"	20 9	26 3	29 0	55 2	38 5	41 5
	Fertilizer consumption (NPK)	'000 tns	69	785	1,761	3,411	5,255	8,680
	Electricity consumption	Mln KWH	203	1,892	3,466	9,621	13,189	20,500
	Foodgrains production	Mln Tns	55	72 3	94 0	111 2	109 7	152 0
F	Index of Industrial Production	All commodities (100) 1970=100	29 7	82 8	90 1	135 2	148 1	183 4
	Mining & Quarrying	(9 69)	44 7	90 2	96 4	137 8	145 1	219 5
	Manufacturing	(81 08)	30 5	85 3	83 7	131 8	143 5	170 5
	Electricity	(9 23)	10 7	58 2	81 5	162 4	191 8	257 8
G	External Transactions							
	Export	Rs Crores	601	806	1,358	5,142	6,418	9,743
	Imports	"	650	1409	1,909	5,074	9,143	15,618
	Trade balance	"	−49	−603	−551	+68	−2,125	−5,875
	Foreign Exchange Reserve	"	755	182	394	2,864	5,164	5,498
	Gross external assistance as % GNP	%	—	3 2	3 8	1 6	1 1	1 0
H	Standard of living.							
	Real Per Capita Private consumption	In Rs	410	492	522	535	859	613
	Per capita availability of foodgrains	Gms/day	395	408	445	437	411	471
	No. of beds	Per lakh persons	33	62	63	79	74	72
	Literacy	%	16 7	24 0	24 0	29 5	29 5	36 0

*Some of the figures relates to 1983-84

She considered planning in India as a charter of orderly progress By strengthening the economic fabric of the country as a whole, it means a powerful contribution to our goal of national integration A free market economy can bring economic growth, she used to remain us, but would not bring the kind of equality of opportunity which the vast masses of our 'underprivileged expect' In all the Five-Year Plans, which were prepared under her leadership, emphasis was laid on the common man, and on the weaker and less privileged sections She always accepted that planning should result in greater equality in income and wealth, there should be progressive reduction in concentration of income, wealth and economic power and the benefits of development should accrue more and more to the relatively less privileged classes of society (Lok Sabha debate, May 8, 1969).

Table-2

Growth Rate of Major Indicators

	1950-51 & 1965 66	1965-66 & 1976-77	1979-80 & 1984-85	1965-66 & 1984-85	1950-51 & 1984-85
1	2	3	4	5	6
A National Income					
Aggregate	3 3	3 7	5 3	3 9	3 6
Per Capita	1 2	1 4	3 0	1 6	1 5
B Gross Domestic Capital Formation	10 7	12 9	15 9	13 8	11 6
C Gross Domestic Savings	9 5	15 2	13 9	14 2	11 3
D Employment in Organised Sector		2 2	2 4	2 3	-
E Agriculture					
Net sown area	0 9	0 3	0 4	0 2	0 5
Net Irrigated Area	1 6	2 7	1 6	2 4	2 0
Fertilizer consumption	17 6	14 3	10 3	13 5	15 3
Electricity consumption	16 0	15 9	9 2	13 3	14 5
Foodgrains production	1 8	4 0	6 6	4 0	3 0
F Index of Industrial Production	7 6	4 5	5 5	4 5	5 9
Mining & Quarrying	5 2	3 9	10 9	5 0	5 1
Manufacturing	7 6	4 1	4 4	3 9	5 5
Electricity	17 6	9 7	5 5	4 5	5 9
G External transactions					
Export	3 0	18 3	11 0	14 8	8 8
Imports	5 3	12 4	14 3	14 3	10 1
Foreign Exchange Reserves	9 7	28 5	1 6	20 8	6 2
H Standard of Living					
Real Per Capita Privat Consumption Expenditure	1 2	0 8	2 5	1 2	1 2
Per Capita availability of foodgrains	0 7	0 6	2 8	0 8	0 5

During her 16 years in office, she led the economy on the ladder of progress There is no denying the fact that she could not succeed in solving the twin problems of poverty and unemployment, many of the achievements of the economy are real As seen in Table 1 and Table 2 real per capita income increased at the rate of 1 5 per cent between 1965-66 to 1984-85 as against 1 2 per cent between the period 1950-51 to 1965--66 Gross Domestic savings and Gross Domestic Capital formation as percentage of GNP increased in both the periods, but the increase in gross domestic savings was more than that in gross domestic capital formation in the latter period However, the annual rate of growth of domestic capital formation in real terms (financial flows) decreased in the period 1965-66 to 1984-85 compared with the earlier period of 1950-51 to 1965-66

Commanding heights of public sector

The share of public sector in gross domestic capital formation rose tremendously from 27 per cent in 1950-51 to 50 per cent in 1965-66 and declined marginally to 49 per cent in 1982-83 However it still reflects the sustained dominance of public sector in the Indian economy

The era of Mrs Gandhi had seen an accelerating pace in all the aspects of Indian economy There is no denying the fact that average Indian is certainly better off now than in 1966 His real income to-day is 40 per cent more than 18 years ago In real terms it has increased from Rs 1199 in 1965-66 to 1633 in 1984-85 The real per capita private consumption has risen from Rs 492 in 1965-66 to Rs 613 in 1984-85 Whereas the availability of foodgrains per capita per day has increased from 408 grams to 471 grams during the same period

Problems in Sixties

When she became the Prime Minister of India, she inherited a major economic crisis The foodgrains production had just shrunk by 18 per cent prices were running amuk with an inflation rate of 15 per cent industry was into a two year recession Imports were 175 per cent of exports A majority of our people were being fed by imported foodgrains The economic crisis were so severe that it resulted in the suspension of launching of the Fourth Five Year Plan for a period of three years

There was a political backlash The World Bank failed to fulfil the promise of aid At the home the

was not advised correctly by her economic advisers Perhaps this was the main reason of her permanent distrust of economic advisers. When failed to get correct advice at home and abroad, she opted for an adventurist course which helped her ride the storm Table 1 and Table 2 depict the performance of Mrs Gandhi era as compared to the performance of the Indian economy in earlier era on the basis of a number of indicators

More and more progress

As seen in Table 1 and 2, during the period 1965-66 to 1984-85, foodgrains production increased more than in the period 1950-51 to 1965-66 However, the increase in non-foodgrains production was only marginal Whereas increases in overall agricultural production including that of foodgrains in the period 1950-51 to 1965-66 came mainly from the expansion of area under cultivation, in the period 1965-66 to 1984-85, they came mainly from the rise in per hectares yields of almost all major crops The foodgrains production rose from 72 3 million tonnes in 1965-66 to 151 0 million tonnes in 1984-85 The annual average growth rate between 1965-66 and 1984-85 was 4 0 per cent as against 1 8 during 1950-51 to 1965-66 The increase in the annual average growth rate during the latter period has been as a result of the adoption of new agricultural strategy The net irrigated area has increased from 26 3 million hectares in 1965-66 to 41 5 million hectares in 1984-85 In fact, as evidenced from the two statistical tables between 1965-66 and 1984-85, the annual rate of increase in the consumption of fertilizers and extension of irrigational facilities has been phenomenal

So for as performance of industrial sector is concerned, the index of industrial production increased from 82 8 in 1965-66 to 181 4 in 1984-85 However, a comparison of growth rate indicates that it slackened during the latter era It was less than 5 per cent during 1965-66 to 1984-85 as compared to 7 6 per cent during 1950-51 to 1965-66 In both these periods, the industry groups such as chemical and chemical products, petroleum products and non-electrical machinery showed higher growth rates during both the periods than the average growth of all the industries

On the external transactions front, the trade deficit has gone up by about 9 times of the 1965-66 deficit as percentage of GNP has slightly declined The foreign exchange reserve (excluding gold and SDRs) which has declined from Rs 755 crore in 1951-52 to Rs 182 crore in 1965-66 has increased considerably during Mrs Gandhi's era It was Rs 5,498 crore during 1983-84

Nationalisation of major banks

One of the important economic events of Mrs Gandhi era is the nationalisation of major banks Bank branches have grown significantly in number and have spread into rural and earlier unbanked areas Thus while in 1968 only bout 22 per cent of the bank branches were in rural areas, in just two years after nationalisation their share has risen to 36 per cent. By March 1984, 56 per cent of the total bank branches were in rural India Another significant factor is the deployment of bank credit. The priority sector's share in bank credit was a meagre 2 per cent in 1968-69, by 1982-83 this share has increased impressively to almost 38 per cent

For all the times to come her 20-Point Economic Programme launched in June, 1975 and revised 20-Point Programme launched in January 1982 will be considered as the Magna Carta for the amelioration of the condition of the poor and the unemployed

Ever since she became the Prime Minister in 1966 till her tragic death in October 1984, she steered the Indian economy successfully from crisis to crisis The aftermath of the Bangladesh War, poor harvest in 1972-73, increase in oil prices, J P movement, nationwide railway strike, Assam agitation, Punjab episode—to name a few In such a situation, if she failed to achieve some of the tasks she set in her broadcast quoted earlier, the causes could be elsewhere During her life time, what hit the headlines of newspapers were the crisis and not her achievements

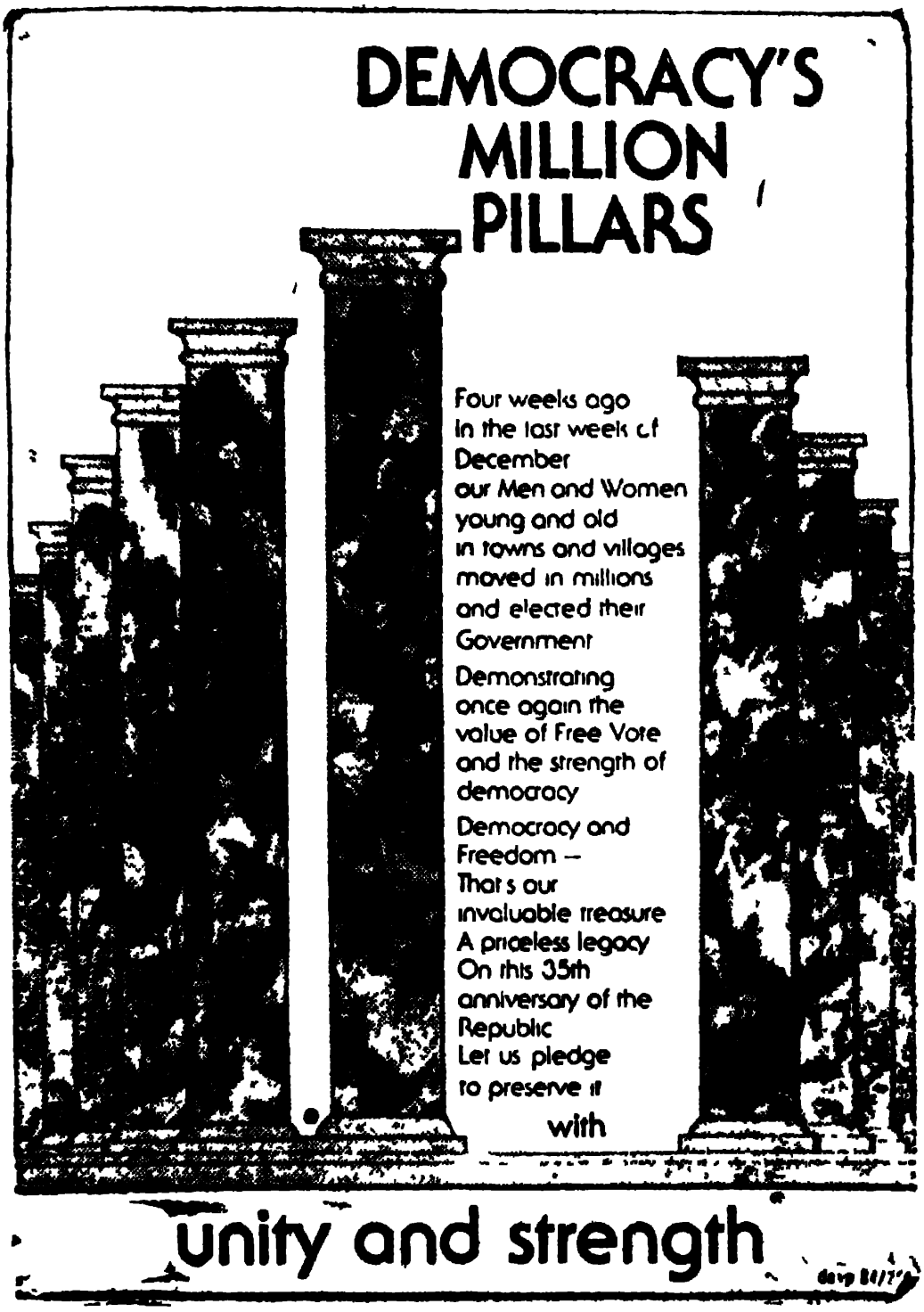
Failures

There is no denying the fact that successes and failures are the part of one's own life be it of individual or of a nation There is no doubt that the list of failures of Mrs Gandhi's era on economic front is not blank In this list one may include failure of public sector, increasing unemployment, black money, smuggling and mounting corruption If there were failures, there were also achievements No one can say that her performance on economic front was a gold-winning one At the same time, she was not a non-performer as the nation has not dropped out of the race Mrs Gandhi has left the economy with enough wind to keep it running, in fact, to keep up pace in the period ahead To quote her last voice, 'Every drop of my blood, I am sure will contribute to growth of the nation"

Promises to carry her unfinished tasks

Like her, the new Prime Minister has also promised in the Election manifesto of his Party to the speedy removal of poverty, development of agriculture and industry, expansion and modernisation of infrastructure, productive employment for all citizens, adequate provision of health and educational facilities, special programmes for scheduled castes, scheduled tribes and other disadvantaged sections of the society and balanced regional development

People have responded to the New Prime Minister by giving him an overwhelming majority The Prime Minister has also assured the people that he will successfully carry out the unfinished task of Mrs Gandhi One hopes he will carry forward the nation on the path of prosperity and fulfil the unfinished task of Mrs Gandhi □


DEMOCRACY'S
MILLION
PILLARS
Four weeks ago
In the last week of
December
our Men and Women
young and old
in towns and villages
moved in millions
and elected their
Government
Demonstrating
once again the
value of Free Vote
and the strength of
democracy
Democracy and
Freedom —
That s our
invaluable treasure
A priceless legacy
On this 35th
anniversary of the
Republic
Let us pledge
to preserve it
with
unity and strength

Urban settlement in Seventh Plan

Ramesh Chandra

The population explosion in India during the last five decades has generated high density urban settlements and also led to the formation of slums The 7th Five Year Plan lays emphasis on the development of human settlements in a balanced manner. Here the author analyses problem areas encountered in the planning of balanced urban settlements and suggests coordinated projects for successful implementation

THE GROWTH OF urban human settlements in the world which has taken place during the last decade and which is projected to take place till the turn of the century, i.e. the year 2000 A D is phenomenal.

While the world population is estimated to increase by 1500 million, more than three-quarters of the increase i.e. 1200 million people will be added to urban human settlements in more than 15 years It has been estimated that in the developing countries, the percentage of the population living in urban settlements will rise from 28 per cent (1975) to 44 per cent.

In numbers this signifies a growth from 830 million to 2150 million In Africa, the urban settlements are expected to double their size from 160 million to 350 million. In Latin America 75 per cent of the population (455 million) would be living in urban settlements by the year 2000.

In 1950 only two cities in the developing countries had over five million inhabitants. In 1980 there were 16 cities with a population of five million or more in the world of which 19 were in developing countries By 2000 A D, if the present trend continues, 58 cities of the world will have a population of five million or more, 44 of which will be in developing countries It has been estimated that the population of slum and squatter settlements in urban settlements areas is increasing at twice the rates of growth of population of the cities This is four times faster than the world population growth

Spurt in urban population

In our country, total population has grown from 279 million in 1931 to 684 million in 1981 The annual growth rate which was 2 16 per cent in 1951 to 1961 increased to 2 48 per cent in 1961—71, but declined to 2 46 per cent in 1971—81 In terms of growth of urbanised human settlements, India is by no means a highly urbanised country

According to 1971 census, about 20 per cent of the total population resides in the urban areas and the remaining 80 per cent lives in rural settlements This proportion has further increased to about 24 per cent according to the 1981 census However, in absolute numbers, the total urban population living in urban settlements comes to 156 million which is large enough by any standards There are 12 cities of million-plus population and more than 200 cities of population between one lakh and 10 lakhs in the country.

The results of lack of attention to the planning of human settlements are becoming obvious day by day The unplanned and un-regulated growth of human settlements is leading to the springing up of large slums and concentration of squatter settlements. This is creating a rural-urban divide resulting in inter-personal differences and inter-regional imbalances. This is also leading to environmental degradation, depletion of resources, breaking down of services and accentuation

of the problem of urban renewal and environmental pollution

There is a close connection between the unplanned human settlements and the problem of poverty Poverty is the biggest problem of the Third World Approximately, two-third of the population of the developing countries i e about 1 2 billion people live below the poverty line and of these 700 million could be put under the category of destitutes Lack of proper housing is an important dimension of poverty Approximately, one-fourth of the world's population does not have adequate shelter and live in extremely insanitary and unhygienic conditions More than 50,000 people die of malnutrition and disease every day. One hundred million people have no shelter and sleep on streets, pavements and open spaces

From this background emerges the supreme necessity for a basic policy framework of human settlements The policy may undergo change due to local variations

A "Settlement Pattern" has to be evolved with accent on proper land use, growth with social justice, employment opportunities and curbing of migration to high density metropolitan areas

Planning with eco-balance

The planning of human settlements raise certain issues the solution of which requires Research and Development efforts on continuing basis Pattern of human settlements has to be such which is comparatively free from natural hazards A large part of the world faces the risk of one natural hazard or the other It may be floods storms or earthquakes

A satisfactory human settlement policy must take into account these natural hazards and evolve a strategy of building up protection measures against these natural hazards It may be worthwhile to attempt the formation of a National Plan of Human Settlements mapping the entire land mass of the country in the various regions of optimal growth or density of population The need for conservation of scarce resources including energy while planning human settlemets needs no emphasis

The problems faced in planning of human settlements particularly in developing countries are lack of cohesion and linkages of the plan, inadequacies of outlays and the lack of effective machinery

Emphasis in Seventh Plan

It is a matter of satisfaction that the approach to the Seventh Five Year Plan in India has placed emphasis on the development of human settlements. It has emphasised that the need for shelter or housing has emerged as one of the most important felt needs of the country, perhaps next only to food With regard to the provision of shelter which is an important dimension of human settlements, the approach of the Seventh Five Year Plan says - "If a further deterioration in housing shortage is to be prevented and shelter is to be provided to the net addition to population, the number of houses required to be built would be at least 17 million during the Seventh Five Year Plan period".

This is a colossal figure and nothing short of a major national programme of housing development can hope to tackle it. The approach of the Seventh Plan also highlights another important dimension of human settlement that of urban growth. It is recognised that provision of shelter cannot be developed significantly without infrastructure, primarily consisting of electrification, water supply, local roads, sewerage and garbage collection etc In the Seventh Plan it has been envisaged that the process of urban development will be spread out over 12 metropolitan cities of million plus population, more than 200 cities of population between one million and one lakh, towns with population between 1,00,000 and 9,000 and small rural urban centres

The national and central financial institutions and banking structures should be involved more actively the process of lending funds for the growth of human settlements With a view to ensuring a smooth flow of adequate finances there is a need for a central financing organisation at national level for extending assistance for projects and schemes for settlements particularly in urban areas

The year 1987 has been declared as the International Year of Shelter for Homeless by the United Nations Organisation The task of ensuring proper growth of human settlements in developing countries is a colossal one This necessitates development of a system of International cooperation and understanding

The involvement of international organisations with regional and sub-regional units will quicken the pace of implementation of the programme

The need for international cooperation and exchange of expert experience and research findings will be felt more in the areas of developing low cost sanitation cheaper and more effective system of sewerage and the use of substitute material and energy saving This is not a problem of developing a few pockets of islands in selected countries, this is linked with the far wider problem of the growth and sustenance of the civilization itself

Solar cooker for rural areas

SOLAR COOKER DESIGNED by Central Arid Zone Research Institute, Jodhpur comprises four square and four triangular plane glass reflectors and insulated semi-cylindrical box at the back made of allumanum sheet and wood on an angle from stand designed for adjusting the equipments towards the sun. A cradle like cooking platform made in the oven helps in keeping the vessel containing the food horizontal. All types of food can be cooked within one hour. It is useful to the people in the rural areas.

Income inequality and socialism

Dr. Pratap Narayan Singh

Non-implementation of professed socialistic pattern economy of India has widened, among others, inequality of income of the rural and urban people and more explicitly between the industrial sector and agricultural sector. To give effect to the policy of socialistic pattern of society, the author calls for a uniform national policy for ceiling on income, putting an end to inter-sectoral and intra-sectoral biases with respect to property and income and a time-bound programme for speedy removal of unemployment

FOLLOWING INDEPENDENCE, specially since the Second Five Year Plan the Government of India decided to establish a socialistic pattern of society wherein the income inequality will be reduced to a minimum the masses will be provided a minimum source of livelihood, and there will be no much concentration of wealth in private hands. The Sixth Plan document says, "The objective of social justice as articulated in the Plans has two major dimensions. The first dimension is an improvement in the living standards of the poorest groups in society and the second is a reduction in inequality in asset distribution" (Sixth Five Year Plan p 7) Thus, progressive reduction in inequality of income is a pre-requisite for the establishment of a socialistic pattern of society.

The gap in policy !

But along with other lacunae in the practical application of this principle, there is a wide gap in the policy itself with respect to rural and urban India and more explicitly between the industrial sector and the agricultural sector Besides, there is intra-sectoral bias in favour of the rich in both the sectors A wide gap exists with respect to ownership of property in industrial sector and agricultural sector; with respect to right to property for rural masses and other urban higher income-group (non-industrial houses) families and also with respect to urban, industrial labour and agricultural labour and so with respect to organised and unorganised labour. While the income in the rural sector has been restricted to a great extent there is no such limit for the industrial sector In the rural sector we have introduced land ceiling laws which have been implemented by all the States except Nagaland, Meghalaya, Arunachal Pradesh and Mizoram where land is generally held by the community. According to this enactment, a land-holder is not allowed to hold land of category one exceeding 10 to 18 acres (depending on the suitability of different States) If we value it in terms of money it implies that a land-holder cannot own property exceeding Rs 5,00,000 to Rs 9,00,000 (such valuation is based on the assumption that one acre of category-one land is worth Rs. 50,000 in terms of market value prevailing in rural Bihar) Besides, a land holder for the purpose of land ceiling laws stands for husband, wife and three minor children. If we take this into account, an individual in the agricultural sector cannot hold property worth exceeding Rs 1 lakh to Rs 1,45,000 This Act has been implemented since August 1970 as a national guideline The figure will be further reduced if we take into account the further rise in number of children in the family since the enactment of the laws. From this, it is clear that there has been sufficient reduction in the concentration of wealth in the rural sector The corresponding limit in income is roughly Rs 4,000 per annum. There is talk of inequality of income in the rural sector only

Non-implementation of urban ceiling laws

But we find that the same has not been so effectively implemented in the urban and the industrial sector as well, although an urban ceiling law has been enacted It restricts users of vacant land but does not apply to big houses/buildings, business and industrial

establishments The urban population can be divided in following categories for the sake of analysis pertaining to wealth and income opportunities

(a) Private big industrial houses,

(b) Non-industrial urban population owning property such as big buildings, business establishment, etc

(c) Industrial organised labour, and

(d) Urban poor/unorganised urban labour

So far as the first category of the population is concerned there is no ceiling either on income or property The Industrial Policy Resolution of 1956 followed by further Legislative enactments simply restricts the establishment of industrial units in private hands in specific sectors

As a result of the above said policy an industrialist can hold property worth several crores even worth thousand crores of rupees They divide their share in the name of different members of the family The family owns in the guise of a firm or industrial unit There is no corresponding limit on income of the industrialists

Now, let us come to the second category namely, non-industrial urban property owning class The people in urban sector may own big houses and other business establishments and earn a lot in terms of house-rent, profit etc No such facility is available to a farmer

Similarly, in the category-third, the urban organised labour is much more better off than their unorganised rural counterpart Only the fourth category of people, namely urban poor are deprived of such privileges which is due to intra-sectoral bias

Urban rich allowed more income

Thus, it is clear that an industrialist can hold much more in comparison to an agriculturalist Urban population (except urban poor) is allowed more sources of income than the rural population, giving rise to enormous gap in income limits

There is no objection to having ceiling on land holdings in rural areas But there should be an appropriate counterpart of this policy for the industrial sector also so that we may have a uniform policy This is the reason why the people are suggesting a ceiling on income for individuals in general

The income ceiling in urban sector should be a bit higher than that of the rural sector in view of the higher cost of living in the former But the difference in cost of living does not justify the existing gap The so called urban ceiling Act has failed to bring about the desired results

Bridging the incomes gap

Therefore, we need a drastic change in the policy to have control over the widening gap between the rich and the poor between the rural and the urban population, between the agriculturists and the industrialists and organised and unorganised labour and so on

Here, one question may be raised i.e., the productivity will fall if ceiling is imposed on industrial income But this can easily be solved by establishment of efficient big industrial units in public and co-operative sectors only Besides, only small units should be established in private hands in place of big ones If we are really interested in the establishment of a socialistic pattern of society, we will have to remove the sectoral bias and intra-sectoral bias with respect to income and property and improve the working efficiency of public sector undertakings

Need for a uniform policy

The problem of inequality of income should be studied on a wider perspective so that we may be able to establish a socialistic pattern of society in India in the real sense of the term This will not be possible unless we remove political prejudices and have a uniform policy It is due to the fact that the agricultural sector as a whole, is unorganised Thus, it is clear that we will have to implement the policy of removal of inequality of income and property uniformly and vigorously for all the sectors If we allow concession to one sector, the other sectors should not be discriminated In absence of a uniform policy with respect to the above facts, India will neither get benefits of socialism nor of capitalism

There is another side of the picture also How far we have been able to provide a minimum source of livelihood to our population in general and rural, urban poor population in particular The answer is not very satisfactory

In view of the above facts our suggestions are the following for the establishment of the socialistic pattern of society in India in the real sense of the term

(1) Big industrial units be established in public and co-operative sectors only

(2) Continuous evaluation of the performance of public sector undertakings be carried out

(3) Corruption in management of public undertakings should be completely eradicated

(4) Small-scale industrial units be established in large number in private hands

(5) Uniform national policy for ceiling on income be adopted

(6) The time-bound programme for speedy removal of unemployment be established by creating employment opportunities for all vigorously

(7) Inter-sectoral and intra-sectoral biases with respect to property and income should be removed.

(8) There should be progressive re-distribution of urban property in favour of the poor

(9) The poor section in urban and rural sector should be provided with minimum requirements, viz source of livelihood and shelter.

Educating farmers through broadcasts

Dr. A.W. Sohoni

All India Radio is planning to extend its popular farm school on the air programme to all stations for countrywide coverage. The programme has aroused a considerable interest among the rural listeners as also among the scientists and field officers of the State agriculture departments.

All India Radio has been always alive to its obligations to the rural people, particularly farmers, from the very beginning. However, in 1966 specialised Farm and Home Units were opened up at 10 AIR Stations. Encouraged by the success of this programme, more Units were opened up and now there are 64 farm and Home Units at different AIR stations. In the days to come, we shall have more of such Units throughout the country.

On an average, each Farm and Home Unit produces a programme of 1 to 1½ hours every day in all the three transmissions consisting of important agricultural hints for 5 to 10 minutes in early morning, a programme for rural women in the afternoon, and a Programme of about 45 minutes to 1 hour in the evening covering various rural subjects and hardcore agriculture. The popularity of these programmes can be judged from the fact that the Farm and Home Units on an average, receive 800---900 letters from the listeners per month, there are huge gathering of farmers at the Farm and Home Anniversary Celebrations by AIR Stations. Several studies conducted by the agricultural universities, ICAR Institutes, Indian Institute of Mass Communication, etc. indicate Radio as the most important mass media source of information for the farmers.

Besides covering all these subjects and items which concern the life of rural people, AIR has been skillfully using various formats of broadcasting for making the Programmes interesting and acceptable for actual translation in the field. Among these various innovations of broadcasting, 'Farm School on the AIR' programme has become most popular. This was first introduced in 1973 at two AIR Stations, viz Trichur and Vijayawada. The results of these earlier experiments were very encouraging as revealed by the evaluation studies carried out by the Audience Research Unit of the All India Radio. In subsequent years, the Farm and Home Units at other AIR Stations introduced this programme and at present, it is being broadcast by 31 AIR Stations.

Programme features

The important features of this programme are given below:

(i) After a careful study of the topography, soil conditions climate and cropping pattern, other agro-physical factors a relevant topic is selected keeping in view the needs of the farmers in the particular region which forms the programme zone of the AIR Station. The selection of the topic is done by a committee consisting of farm broadcaster, agricultural scientists, Agricultural Extension Officers and the representatives of farmers.

(ii) The syllabus for the course is designed carefully by the same committee which selects the topic. All the aspects related to the selected topic are thoroughly discussed and a series of lessons are devised. The

committee also suggests for each lesson an appropriate expert who prepares the technical material for his lesson. After all such lessons are prepared, the committee finalises the sequence of broadcast of lessons ensuring that the topic has been well taken care of in all its aspects

(iii) Suitable advance publicity is given through radio announcements, local newspapers, and also with the help of field staff of the Department of Agriculture Many a time, leaflets and circulars are also profusely distributed among the potential listeners In order to encourage regular listening, the listeners are invited to register themselves for the course Registration is of course free and anybody can register himself by sending his personal details in a simple proforma. It will be interesting to know that during the years 1-1-81 to 1-1-84, the total number of registered listeners for different AIR Stations for this programme was 1,08,296 The number of actual listeners must be many times more

(iv) The lessons in this programme are presented on the fixed dates of the week and also at fixed timings The listeners are already informed of the schedule of broadcast of lessons, so that they don't miss any lesson Although no particular format or method of presentation of the lesson has been prescribed, the experience has shown that lecture-cum-discussion followed by question and answers is best suited to this type of programme At the end of each lesson, the expert asks three simple questions arising out of the contents of the lesson and the listeners are requested to send the answers to these questions on a postcard to the AIR Station This exercise gives a fair idea about the position of listening and the lesson understanding capacity This helps in making desirable changes in the presentation of subsequent lessons

(v) To create a sense of purpose and to fulfil the natural desire of recognition and achievement, the evaluation of the School Programme is done through organising written tests at different places in the programme zone of the AIR Station Advance publicity is given on mike about the schedule of the written tests at selected villages and registered listeners are required to appear for the written test The experts set a simple question paper and also help in the evaluation Answer books, pencils, etc are provided by the AIR Station and the village schools provide a place for conducting the test

(vi) After the written tests are over, the AIR Station holds a Prize Distribution Ceremony either at the Station itself or at any other place in the programme zone. All concerned Departments of the State Government research institutes, colleges, etc are heavily involved in this function. Prizes are distributed to those farmers who have done well in the written test and certificates are awarded to all those registered farmers Various Government organisations, banks, etc have come forward for giving prizes and during 1981-84, a total number of 1698 prizes were awarded to the winners of this programme in different AIR Stations The nature of prizes consisted of ploughs, plant protection equipment, irrigation pump sets, fertilizer bags, seeds, storage bins, transistors, wall clocks, thermos flasks, gift cheques, cash, cross-bred cows, pressure cookers and so many other articles

It is now proposed to organise the study tour of the winner farmers to various places of agricultural interest in the country instead of giving them prizes The initiative in this direction has already been taken by AIR Station at Trichur

(vii) One of the limitations of radio programmes is that it has no reference value Once the programme is over, there is no way for the listeners to refer back to it for information and for revision On account of this, at the end of the course, the entire material is published in the form of a book and distributed to the registered listeners This is done with the help of State Departments, agricultural universities, agro-industries, bank and other rural development agencies

From 1973 to 1981, 31 AIR Stations conducted 93 courses and covered 261 subjects registering more than 1,40,000 farmers out of which more than 40,000 took the written test Between 1981 and 1984, 28 AIR Stations conducted 200 courses covering 193 subjects registering more than 1,00,000 farmers out of which more than 52,000 took part in the written test The Farm School on the Air programme has not concentrated its attention to the subjects of crop and animal production alone, but it has covered a variety of subjects like gobar gas technology agricultural marketing and management, land reclamation, sericulture apiculture, nutrition, etc

The Farm School on the Air programme has arouse lot of interest among the rural listeners and also among the scientists and field officers of the State Departments On account of this, AIR is planning to have this programme from almost all AIR Stations where ever it is feasible to undertake such a programme

TOWARDS SOCIAL REVOLUTION
a Case for Economic Democracy -
VASANT SATHE

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A policy for technology

MODERN INDUSTRIAL PRODUCTION requires the use of the latest technology not only to achieve efficiency but also to attain the necessary scale of production Knowledge has never known any territorial barriers, and with modern media facilities, the availability of the latest techniques is more or less simultaneous in many parts of the world Developing countries might not be in a position to invest heavily in research and development but they have the expertise to be able to absorb and adapt the technologies developed in the advanced countries While trying to adopt the latest technology, the scientists and technologists of the developing countries would acquire greater skills and expertise as well as knowledge which could help them in turn to do their own R&D work and improve upon the technologies acquired Indigenisation and self-reliance should never in prevention of the inflow of new knowledge and technology Here, it would be relevant to recall the remarks of Raul Prebisch in his statement to the Seventh Session of the Economic Commission for Latin America The deep-seated ill does not in fact lie in the technology itself but in the social structure into which it is introduced a structure which permits highly inequitable appropriation of the fruits of the increasing productivity which the technology brings in its train These fruits of technical progress represent an ever-growing capital accumulation potential. And I am persuaded that if this potential were utilised as far as possible in economic and social investments, we should make steady progress towards the elimination of critical poverty and other evils. It would be, in reality, the starting point for a transformation of the system in a profoundly social sense.

The question that immediately arises is whether a developing country should allow outsiders to bring in their capital and technology, utilise the labour—both technical and non-technical—of the developing country and take away the surplus generated from their activity In other words, should colonial exploitation continue in the form of economic colonialism? The answer obviously will be an emphatic 'no' One solution in such a case could be to lay down the condition that anyone wanting to bring in capital as well as technology to a developing country would be allowed to do so but would not be permitted to take out any part of the surplus generated by industrial activity within the country However, if by utilisation of less expensive labour and available raw materials, the outside investor can produce goods at a competitive rate and export them so as to earn a net gain in terms of the value added for the country, then the investor should be allowed to get a fair share of that value-added income This would encourage investors to come to the developing countries, bring in the latest technologies, create employment for the people in these countries, generate surplus capital formation within the country and also earn substantial income from outside No investor from anywhere would ever come for the sake of charity, and hence, to allow the investor to get a fair return from the net value added by way of export would be fair, both to the investor as well as to the country concerned

In terms of international phenomena (such as global recession and protectionist policies) also it is in the interests of the developed countries to invest in the developing countries improve the living conditions and the purchasing power of the people in these countries and thereby create larger economic markets for the technologies and the goods produced in the developed countries It has been seen that the growth of restricted vertical affluent markets reaches a point of saturation and benefits only a few, ultimately causing unemployment even in the developed countries One of the side effects of such a vertical growth of the centre is the heavy investment made in the armament industry. The wasteful diversion of resources and the likely catastrophic consequences are too well-known to be reiterated

Coming to the industrial economics of a developing country, the growth of industrial activity should be freely allowed, provided the organised sector conforms to the participatory econometric model of the triumvir or the trimurti of the main productive forces described earlier. After this elementary requirement has been fulfilled the entrepreneur and his other partners, both finance and labour, must be informed that any investment from outside would be allowed only if it conforms to the aforestated conditions.

If full and free growth is desired, the constraints imposed by the state should be minimum or nil. If people are allowed to invest freely even in their own interests, they would not choose areas where there is no scope for competition. As long as these investors bring in their own capital they should be left totally free to invest in areas of their choice without any restrictions whatsoever. It is only when an entrepreneur asks for capital from public financing institutions that these institutions would be legitimately entitled to state that they would lend finance for productive activity in areas according to the national priorities.

Let us take up the electronic industry, with particular reference to the consumer electronics as an example. If people were allowed to invest in the labour-intensive electronic industry on the principle that they would be allowed to take out only about 20 per cent to 25 per cent from the value added on the condition that they would have to bring their own capital, and being a low priority sector capital from public finance would not be available or would be available on a very low priority, the net result would be that the electronic industry would grow at a much faster pace using the qualified technical people within the country, generating larger employment and earning substantial foreign exchange. Here is an industry which has no locational constraints, is pollution free and requires the less consumption of power and comparatively little capital. Table 5.1 shows the employment potential of selective industrial groups.

Table 5.1—Employment potential of selective industrial groups

Industry group	Fixed assets requirement for creating an extra job	Number of jobs created with Rs 1 crore of investment
Chemicals and petrochemicals	304 000	33
Power generation and distribution	266,467	35
Non-ferrous metal products	200,877	49
Ferrous products	150,331	66
Sugar	142,827	70
Rubber products	131,022	76
Automobiles and bicycles	109 441	91
Pulp, paper and paper products	96 865	103
Machinery manufacturing	76,615	126
Textiles	74,940	133
Electrical equipment	40,542	246
Electronics	32,129	311

It is not always desirable to give examples of other countries, because conditions and circumstances differ. All the same, it would be interesting to note about a country comparable in many ways, namely, the Republic of Korea (or South Korea), which acquired statehood in 1948 and which established an electronics commission in the same year as India did, i.e., 1970. South Korea's industrial base then was more or less the same as that in India. India could, in fact, be said to have better qualified technologically as it possesses the world's third largest technical manpower. Other things being equal, the Republic of Korea by adopting a rational policy, allowed the growth of electronic industry at a much faster rate and, in the process, developed indigenous content as well as earned much more foreign exchange compared to outside investment. Table 5.2 shows the rate of growth which the Republic of Korea achieved in less than a decade as compared with the growth of the electronics industry during the same period in India.

Unfortunately, some people consider the electronics industry a non-priority industry. This is wrong because electronics is now being used in practically every field of scientific growth including space technology, health, agriculture, education, communication, office management and in practically every field of industrial activity.

Table 5.2—Comparison of production and export of electronic goods in respect of India and South Korea (in million U.S. dollars)

Country	1971		1976		1981	
	Production	Exports	Production	Exports	Production	Exports
South Korea	138.00	88.00	1422.00	1017.00	3791.00	7218.00
India	220.00 (1972-73)	7.00 (1972-73)	460.00 (1975)	24.00 (1975)	995.00 (1980-81)	51.00 (1980-81)

But even accepting for the sake of argument that electronics is a non-priority industry, if you invest Rs 100 crore, you generate a capacity of earning about Rs 25 crores per year by export apart from creating employment and capital generation within the country. Can this be considered an economically non-viable proposition? In addition by producing the items the country would be able to prevent large-scale smuggling which, in spite of the government's best efforts to curb is taking place regularly, draining the country's scarce foreign exchange resources.

Thus, from every point of view, the growth of the industry would have been desirable but some of the policy-makers, in the name of self-reliance and other priorities, refuse to allow the latest technology to enter or obstruct the growth of this industry and insist on persisting with obsolete technology such as the black-and-white transmission in the field of television. These persons even made artificial and false projections or to justify the setting up of a black-and-white glass shell plant in the public sector to produce one million black-and-white glass shells and picture tubes per year

As events have shown and proved beyond all doubt, one really cannot stop a better and a more attractive technology from coming in. Although the policy-makers tried deliberately to keep the price of a colour TV set much higher than that of a black-and-white set, the result is there for everyone to see. The demand for black-and-white sets has fallen and that for colour sets is on the increase

This is true also of the growth of the media electronics Whereas in terms of modern development, low-power transmission systems on TV covering a radius of 25-30 km can be produced, and, if produced in India, would cost approximately Rs 5 lakh, and whose operation has proved to be successful in the remotest areas of the north-eastern regions, Sikkim, the Andamans, etc, it required a tremendous effort to persuade some people to agree to make these low-power transmitters within the country and allow every district or parliamentary constituency to have low-power transmission so that the whole country is covered by the most powerful, useful, educative and entertaining media, the television The other aspect of technology which has gained importance is the availability of wide-screen projections and video cassettes or discs The cost of these two devices, if produced economically, would together be less than Rs 10,000 per set, which any community collectively can easily afford Consequently, audio-visual education and entertainment can be taken to the very doorstep of the people in the villages and to the remotest part of our country

It is well known that even today cinema has not been able to reach the villages, and the whole country has less than 10,000 cinema houses, concentrated mostly in urban areas This is an insignificant number in comparison with the Soviet Union which, with about one-third the population of India, has over 100,000 cinema houses Thus, here is the modern electronic medium in the form of a video cassette player and a wide-screen projector available to reach the villages and to communicate with our people who have been brought up in the audio-visual tradition and to whom such a demonstrable communication system would be of great educative importance both for agricultural activities as well as for other purposes This very facility could be used in the schools for presenting educative programmes produced by experts and could be linked to the low-power transmitters and used as an ordinary TV set to receive the programmes telecast from the national or regional stations at no extra cost of transmission

The major reason for stifling the growth in the electronic sector, which has clear advantages that cannot be rationally controverted, is the existing pattern of administartive constraints We tend to stick to some false notions and unfounded prejudices and then put so many obstructions that growth becomes practically impossible

Then there is the high-sounding controversy about the public sector and the private sector The concept of the public sector, as envisaged by Jawaharlal Nehru, was that public investment should be made in core sectors where the infrastructure had to be built, and because of its long gestation period and low profitability, private investment would not be possible Hence, public money had to be invested in basic industries such as steel, power, fertilizers, cement, coal, oil and natural gas, so as to provide what is known as the infrastructure for producing goods of consumption in the private sector

In fact, apart from the distinction that the so-called public sector utilises public finance for infrastructure industries and the so-called private sector also utilises public finance for consumer industries, there is no other difference between the two

However, one other distinguishing feature which eventually developed with regard to the two sectors was that whereas the so-called public sector was manned and controlled mostly by the bureaucratic administrative cadres, the private sector continued to be in the hands of people not connected with the government In the public sector, the bureaucracy took with it the bureaucratic culture, namely, restricting the hours of work, having a huge establishment which increased the overhead costs, creating multifarious decision-making points so that no one person could be held accountable and which also meant that no decision could be taken in time (thus causing time overrun), increasing the costs of the project, delaying commencement of production, and even when started, not acquiring capacity utilisation, and even if capacity utilisation was achieved, the profit as a ratio to investment was far too low, only because of the high percentage of the cost of the variables

Thus, although many inhibiting and inefficient features were inducted into the so-called public sector, this sector got identified as a government sector and therefore became a 'holy cow' which could not be criticised by anyone and had to be defended by the government at any cost Even the legitimate return and capital generation expected from the investment made in the public sector have not been achieved, as has been shown earlier

The picture in the private sector has been ever more dismal because, although this sector has had all the advantages, namely, efficient management, cheap labour, availability of public finance, operation in areas yielding high and quick profits, minimum gestation period and availability of technology and infrastructure, it used all these facilities to generate unaccounted income by cheating the labour, the public and the government by evading the payment of proper wages and taxes This unaccounted wealth was systematically used to lubricate and thus circumvent the decision-making points created by constraints and controls, imposed by the bureaucratic authority

and this generated the malady commonly called corruption. More constraints and controls were imposed in order to stop the corruption generated by the earlier constraints, but this only brought about more corruption. As more and more unaccounted wealth accumulated in the hands of a few, the corrupting power increased phenomenally and dominated practically every field of public life including the political parties.

While on this point, a common misconception needs to be dispelled, even at the risk of being somewhat discursive. It is felt that parties can win elections only if they have large funds. However, it has been time and again demonstrated that although funds for propaganda have become an essential feature for elections, yet funds by themselves do not influence the elections, and the theory that votes can be bought has been rendered fallacious by the voters. Those whom one can buy at all are the electoral candidates or the elected representatives but no party has either the funds or the capacity to buy the electorate. The elections held from 1977 to early 1983 bear more than eloquent testimony to refute this theory. The recent elections have shown that the common electorate votes more on the basis of its intuitive impulse. If it feels that a particular leader or party can deliver the goods, it goes with that leader or party en masse. In the same way, if the electorate is disappointed, frustrated or angry, then it does not hesitate to register these feelings by giving a negative vote against anyone who momentarily becomes the target of its wrath. This happened in 1977 when the people voted in favour of an amalgam called the Janata Party at the Centre and again in early 1983 when they voted for parties such as Telugu Desam in Andhra Pradesh and Janata in Karnataka. These elections have shown a dangerous trend of throwing up regional and fissiparous forces and unless the thinking people in this country wake up in time and find the causes for the growth of these tendencies and eliminate them, things could deteriorate very fast and the very unity and integrity of our country may be threatened.

Most of the regional and fissiparous tendencies are the result of basic frustration caused by economic conditions. Unless people in every part of the country are made to feel that their personal interests also would be better served by belonging to a single unified nation the feeling of nationalism cannot be strengthened. Emotionally and spiritually an average person would naturally want to belong to a larger entity. It is only when he feels insecure for want of opportunities that he shrinks into the narrow shell of groupism and regionalism.

The real solution therefore, is to involve in the mainstream the entire people of every region, irrespective of language, creed, caste, religion or region, and create economic opportunities by increasing productive activity, communication and commerce. Thus interrelationship would automatically grow and this would help in strengthening the bonds of unity.

The thesis being propounded here is to involve the entire population as equal partners in the economic activity of the production of goods and their distribution. It is common experience that a person gives his best when he has a stake in that work and when he gets job satisfaction. This stake can be created by making him a real participating partner in the productive activity and not merely an employee of some other master. The concept must be that land, being an endowment of nature, should be deemed to belong to the entire human society. Human beings should by their entrepreneurship, organising capacity and labour, both skilled and unskilled, use this land to the production of goods and services and must do so as equal partners. This concept alone would create a sense of full participation and belonging. True equality does not mean everyone being identical members of society. The participation of labour and management on an equal footing would benefit all the participants who contribute to the overall production. Society has been, and will always be, willing to recognise and honour persons of excellence in the fields of science, technology, arts, literature and sports.

But by no stretch of imagination does this mean that the better qualified members of a society can be given the right to exploit other members and to deprive them of even their legitimate needs. They cannot also claim a right to acquire, usurp and accumulate an extravagant portion of the surplus created as a result of the labour of the entire society. They should not be allowed to squander money on ostentatious, non-essential, luxuries and comforts, particularly when other members of the human family are denied the very necessities. Therefore, in any productive or economic activity, there should be a sense of equity in equality and due recognition should be given to the members who contribute more in different fields for the growth of welfare of the whole society.

Having thus created conditions where all working people would have a direct stake in the productive activity as partners, the next issue would be that of obtaining job satisfaction. This can be provided only by creating adequate job opportunities so that people can choose jobs according to their likings and capabilities and would not be tempted to change jobs only because of the difference in remuneration. Very often, we know that persons opt for fields of activity in which they have no interest only because they offer better monetary returns. It is common knowledge that if the medical profession seems to yield greater returns, every father wants his son to be a doctor. The same is true about engineering. Some years back, to be a clerk in a bank was not a very attractive proposition but today, because of the high salaries offered, even highly educated boys and girls prefer to get clerical jobs in a banking institution. This is true practically of all services and forms of employment. But yet, we

come across a phenomenon whereby persons, due to sheer love for a particular activity or a vocation, stick to it and even go in for these jobs which give them greater job satisfaction

Hence, it must be the effort of the entire society to ensure that its members have adequate opportunities to go in for activities of their interest by providing adequate returns to enable a dignified living This would be so particularly in the areas of services where productivity cannot be measured in terms of the quantity of goods The quality of life improves because of the arts the literature, the music the dance, the sports the drama, the threatre and all the finer aspects of life to which members dedicate themselves Any society which wants to develop a cultured society must learn to respect and provide adequate conditions of dignified living to its members who contribute to these areas

While we are dealing with the production of goods having dealt with the organised sector and having proposed a model for conducting economic activity on the principle of economic democracy which would prevent exploitation and would generate better and greater surplus we now come to another area where productive activity takes place in the unorganised private sector This, in many ways is even more significant because a much larger number of members of the society are involved in self-employed vocations spread all over the country

In an economic set up goods can be produced with modern technology in a large-scale centralised form of production with the help of machines including automatic machines and thus the economy of scale can be achieved Although this method of production requires heavy initial capital investment it can eliminate the use of labour and can attain larger production Now this is where the whole concept of planning in the use of technology becomes relevant On the one hand there is a school which believes in allowing automation to be introduced to obtain economy of scale and doing away with manual or human labour on the other, there are people who advocate total decentralisation and dispersal of means of production allowing every individual to produce goods irrespective of their quality

We need not opt for either of the two extremes We can always determine suitable areas and adopt methods of productive activity by which goods can be produced by the maximum number of people, and even in the case of individuals all their manual drudgery can be reduced by providing them with small machines, for example a sewing machine or a grinding wheel operated by power The idea ultimately is to ensure that goods are being produced by utilising the productive labour of every member of the human society for which he must get an adequate remunerative return which becomes his purchasing power and which in turn, creates the economic market and national surplus So theoretically even if a few persons by having an entirely automated plant, were able to produce goods, the question would be to whom will these goods be supplied and who will buy them? For, if most members of society have no purchasing power, which would be the case if they have no work, then producing goods even by mechanised automation would be of no avail.

Interestingly, even in developed societies people get fed up of what are known as ready-made garments which are of standard shapes and sizes Tailor made or custom-made dresses are becoming a highly expensive luxury The same thing is true in certain fields such as handicrafts, where there is a personal touch and therefore greater value Human tastes will continue to differ and change with regard to items of comforts and luxuries But in the matter of necessities one does not argue much about the shape and size of the grain as long as one gets an adequate quantity to satisfy one's hunger The same is true about clothing when it becomes a basic need All that a person wants is a durable dress which can cover him and protect him from inclement weather

Therefore in a developing society, the first and foremost emphasis must be on allowing the production of goods which are necessities These goods should be so distributed that they reach the maximum number of people spread out in the rural area Initially the quality of these products may not be as good as that produced in the automated plants but given the help of modern technology such as power the electric motor and improved designs the self employed producer can manufacture even better quality goods such as cloth apparel footwear soap and other detergents oils kitchenware match boxes furniture housing material and many other items of household requirement He can also produce ancillary items in latest technological field such as electronics and supply them to the units where the end product is assembled Ancillarisation in even sophisticated branches of production can be encouraged particularly in the developing societies where manpower is available in plenty and is less expensive

(Next issue National Marketing Organisation)

IRDP performance looks up

The qualitative performance of Integral Rural Development Programmes has shown a distinct improvement in the last four years The achievement in the coverage of Scheduled Castes and Tribes has gone up to 41 7 per cent in 1983-84 from 28 6 per cent in 1980-81 The average works out to 36 6 per cent in the plan period so far

The Ministry of Rural Development has requested the State and Union Territory Governments to diversify the activities taken up under the IRDP and undertake more activities in the secondary and tertiary sectors Consequently 58 9 per cent activities were undertaken in the primary sector, 13 2 per cent activities in the secondary sector and 27 9 per cent activities in the tertiary sector in 1983-84

GRAMMAR OF PLANNING

A Serialisation 14

The international planning

P.R. Dubhashi

After the plan monitoring and evaluation as inputs of a successful implementation of planning the author discusses here international planning through various bilateral, multilateral economic arrangements and international financial institutions to strive for the optimum planning, which should be made a continuous process He says, "the planning system must undergo constant improvements in the light of experience"

WITH THE EVOLUTION of national planning systems in many countries, a stage is set for some sort of integration or collaboration between the different national planning systems In the years to come this is likely to replace, in a progressive manner, international trade and capital flows through channels of private business. Already these latter are drying up with greater participation of the state in the economic system The international economic institutions like International Bank for Reconstruction and Development or the Asian Bank are supporting in an increasing measure the economic development efforts specially of nations particularly, in the underdeveloped countries

A new pattern

But this does not go far enough. A new pattern is, therefore, emerging for collaboration between the planning systems of the under developed countries and the socialistic countries Such measures have already been taken between India and Russia and other eastern countries and joint economic commissions have been set up

At the conclusion of the historic visit of the General Secretary of the Russian Communist Party on November 30, 1973 it was decided to set up Indo-Soviet study group, for cooperation between the Planning Commission of India and the State Planning Committee of the USSR

The group to exchange experience in economic forecasting, formulation of projects and programmes and methods of monitoring and evaluation of projects is set up with the framework of the Indo-Soviet Commission on Economic, Scientific and Technical Cooperation It compises membes of the Planning Commission-assisted by representatives of Central Ministries and officials of the State Planning Committee of the USSR (Gosplan) Specialists of other organisations and institutions connected with planning could be enlisted in the capacity of advisers or experts The Group meets not less than once a year in New Delhi and Moscow by rotation It exchanges the experiences and knowledge in the methodology of annual, medium and perspective planning Agreed minutes of the study group are submitted to inter governmental Indo-Soviet Economic Commission on Economic Scientific and Technical Cooperation

Similar procedures and processes have been evolved over years in respect of other eastern European countries also

New international economic order

The concept of new international economic order which has gained increasing currency in recent years has opened up new opportunities for international planning Economic thinkers, statesmen and diplomats as well as leaders of various countries have thought of in terms of north-south and south-south economic dialogue The success of the European Economic Community has given a fillip to the idea of the Asian Common Market Multilateral and bila-

teral aids from the developed to the developing countries and promotion of international trade on equal terms and without barriers between the developed and developing countries as well as amongst the developing countries have been increasingly advocated Coordination between planning of various developing countries can provide an appropriate channel for such economic cooperation implicit in the international economic order The Joint Commissions between India and developing countries can take up such coordination between India's development plans and the plans of other countries

The optimum planning

We have considered in previous chapters planning in all aspects-the concept and substance of planning, its methodology and process, its organisation and management, its financing and evaluation

An important point which has emerged is that planning is not an end in itself It is a means to an end It is not an ideological finality The tests of its success have to be pragmatic The mere incantation of planning is no guarantee of successful economic development It has to be evaluated in the light of experience There cannot be a dogmatic insistence that 'more the planning, the better it is for the economy' If in the case of planning, as in architecture less is more', we should not hesitate to accept it

Has planning been conducive to the attainment of socio-economic goals ? Has it enabled society to achieve the largest growth of which it is potentially capable and distribute the fruits of growth far and wide through all the sectors of the society ? Posing the question, "Is the French economic expansion attributable to the existence of Le Plan ? Bauchet gives the following answer 'Growth has been particularly vigorous since planning was introduced During the period of planning France has achieved a rate of economic growth at least double that of United Kingdom French joint planning procedures have contributed something to France's economic development' A 70 per cent increase in national product in twelve years gives France a very satisfactory position in the field of peaceful international competition

The achievements of planning in the socialist countries have also been impressive In the Soviet Union, the national product increased from 1950-58 at a speed of approximately 10 per cent per annum and was expected to exceed 7 per cent net annum in the years 1959--65

Japan achieved miraculous economic development during the thirty years after the end of the war Raising itself from the war time ruins and utter poverty, Japan experienced waves of technological innovations and high economic growth However, planning does not claim credit for all this economic accomplishment The modest claim of the Japanese Economic Planning agency is that it has made constant efforts to respond to varied changes in the Japanese economy and assure its smooth management The agency sometimes failed to cope up with coming changes and at other times, made pioneering achievements, providing foresight ahead of time.

In India, Planning has enabled the development of basic industries, building up of infrastructure and modernisation of agriculture However, the rate of economic growth has hovered around 3 to 3 5 per cent while the plans aimed at a rate of 5 to 5 5 per cent This must be considered to be a short-coming of our planning effort

Economic management technique

Planning is not so much an ideology but a technique of economic management which has been found useful in countries with different economic systems At the same time, different economic systems themselves have shown a tendency towards convergence This has made it possible to think in terms of an optimum system of planning which can combine the best features and techniques of the planning system of different countries This is essentially an ecclectistical approach rather than a dogmatic ideological approach The concept of optimum planning, if developed over a period of time, should enable a country to secure optimum growth

Developing a system of optimum planning, drawing on and assimilating the best features of the different planning systems of the world in the developed as well as developing countries, is particularly important for India because after thirty years of experience of planning we have realised that our actual accomplishments which are in the neighbourhood of about 3 to 3 5 per cent of growth rate have fallen short of our target of about 5 to 5 5 per cent growth rate Our planning has gone more or less on a beaten track and is in need of innovations which could make our planning more effective

Some suggestion

The development of optimum planning system requires a conscious attempt to introduce modification and innovations after learning from experience The analysis of the planning system in various aspects attempted in this book does throw up some suggestion for such changes

Firstly, two components of planning should be clearly distinguished-public investment component and the component of general economic development The first component must be treated as imperative though the second may be considered as indicative This means that there should be concentration on public investment planning in respect of which slippage of any sort should be ruled out With a firm commitment to public investments and cent per cent success in their execution, it should be possible to gain a greater measure of reliability regarding indicative components of the planning

Secondly, while there could be a measure of compulsion regarding public investment, indicative planning should mainly rely on fiscal and monetary devices

Thirdly, those patterns of planning which require popular participation should be clearly identified and attention focused on means of mobilising popular participation in respect of those components of planning.

Fourthly, there should be a constant pursuit of the concept of multilevel planning with maximum scope given for decentralised planning, including planning by local authorities In respect of the decentralised sector centrally conceived schemes need not be considered as guidelines

Fifthly, sectoral planning should be supplemented by special planning

Sixthly, scientifically formulated technically feasible and economically viable projects should alone qualify for investment included in the plans

Seventhly, employment promotion should be closely related to the formulation and implementation of projects which can contribute to production and productivity

Eighthly, the pattern of investment should correspond to the factor endowments, especially the abundance of manpower in the country

Ninthly planning must be constantly checked for internal consistency

Tenthly the plan targets must not be out of proportion to administrative capability for plan implementation as well as availability of fiscal and financial resources Planning should be based on facts rather than hopes or wishes

Eleventhly the organisation of planning should be made more and more technically qualified especially at the intermediate and lower levels while the organisation at the higher levels should be more responsive to the realities in the field

Twelfthly, planning should be considered essentially as an exercise based on expertise and should be considered to have its own validity transcending changes in the political complexion of the governmental authority

Thirteenthly, policies and their execution, programmes and their implementation and corporate planning should be considered integral to the process of planning

Fourteenthly and finally, plan monitoring and evaluation should be in terms of impact of planning rather than merely in terms of inputs and outputs

The search for an optimum system of planning is a continuous process The planning system must undergo constant improvements in the light of experience □

(Concluded)

Memorials for Shrimati Indira Gandhi

THE UNION GOVERNMENT have taken the following decisions to perpetuate memory of Shrimati Indira Gandhi the late Prime Minister:

(1) No 1 Safdarjung Road, New Delhi, which was the residence of Smt. Indira Gandhi for over 17 years, will be maintained as a memorial

(2) A suitable monument for Smt. Indira Gandhi will be erected in Delhi The site and design of the memorial will be selected in consultation with experts.

(3) A suitable Samadhi will be erected at the place of cremation The plan and design of the Samadhi will be such as to be in harmony with the surrounding Rajghat-Shanti Vana landscape An appropriate name for the Samadhi is being chosen.

(4) The international airport which is under construction in Delhi will be named Indira Gandhi International Airport

(5) The Indraprastha Stadium will be renamed Indira Gandhi Stadium.

(6) An Indira Gandhi National Centre for Arts will be constructed at a suitable location in Delhi. This Centre will have a separate section for the folk arts.

(7) A statue of Shrimati Indira Gandhi will be erected in Delhi

The Government has also decided to institute an Indira Gandhi International Peace Prize □

You and your health

Surgical treatment o heart disease

Prof. P. Venugopal

Coronary bypass surgery creates alternate blood channels which carry blood from the aorta to the coronary artery bypassing the obstruction and restoring blood supply to the heart muscle It is also known as a surgical marvel of life saving device This mode of treatment is a safe, effective and reliable instrument in the direction of a long and healthy life of a heart patient The AIIMS has developed this expertise effectively and is capable of offering it safely and economically to the public

CORONARY ARTERY BYPASS grafting is the most effective means of directly increasing the blood supply to the ischaemic heart muscle Since 1968 when the procedure was first performed, over a million of such operations have been performed all over the world and currently this is the procedure of choice for the management of this widely prevalent and often fatal disease

Coronary bypass surgery

The heart muscle gets its blood supply from the aorta through three main coronary arteries Two are on the left side which are branches of the left coronary artery The single artery on the right is known as the right coronary artery Branches of these arteries ramify throughout the heart and provide oxygen-rich blood to nourish the heart muscle When any of these main arteries gets blocked by coronary artery disease then there is decreased blood supply to an area of heart muscle and this produces angina Coronary bypass surgery (grafting) is a procedure by which alternate blood channels are created surgically which carry blood from the aorta to the coronary artery bypassing the obstruction, thus restoring blood supply to the heart muscle The conduit used for this bypass is usually the saphenous vein from the leg, which because of its superficial location and length is an ideal conduit for this procedure Removal of the saphenous vein from the leg does not cause any significant disability as other veins in the leg quickly take over its function

Advantage of coronary bypass surgery over medical therapy

The advantages of surgery are manifold Briefly they are

(a) Relief of angina with loss of no medication

(b) Improved quality of life

(c) Increased longevity

(d) Reduced risk of repeated heart attacks

(e) Correction of associated complications like ventricular aneurysm (dilatation of the heart muscle), mitral regurgitation (leaking of the valve), ventricular septal defects (hole in the heart membrane) etc which can not be corrected by medicine

The most significant advantage of surgery is that the constraints on physical activity are removed and the patient can lead a normal life, and even engage himself in activities which involve physical exertion The fear of 'heart attack' which hangs like the 'Sword of Damocles' over the head of every coronary patient is completely eliminated by surgery

surgery is indicated in the following circumstances

(a) Angina unrelieved by medication

(b) Triple vessel disease

(c) Left main stem disease

(d) Complications of myocardial infraction

The indications for coronary artery surgery have broadened over the years as the risk of the operation has decreased considerably Surgery is advisable in all patients with symptomatic coronary artery disease In such cases surgery provides relief of symptoms However, in certain situations like main stem disease (also known as 'widow-maker disease') and in severe tripple vessel disease the life expectancy on medical treatment alone is quite low, hence surgery is life-saving in this case The 10-year survival with triple vessel disease is only 20 per cent without surgery whereas with surgery the 10-year survival becomes 80 per cent Likewise the risk of sudden death in patients with left main stem disease is more than 50 per cent in one year Surgery provides long term relief in these patients Complications like ventricular aneurysm and mitral regurgitation can be corrected only by surgery

The surgical procedure

The operation is carried out under general anaesthesia The first step of the operation is to remove the saphenous vein from the leg, tie off all the branches and to test it for any leakage Then the chest is opened by cutting across the breast bone (sternum) and the heart is exposed For performing the delicate suturing between the coronary artery and the saphenous vein a still bloodless field is essential This is achieved by connecting the patient to a heart lung machine by special tubes This machine takes over the function of the heart and lungs while the surgery is being performed The heart is stopped and cooled with ice cold saline Portions of saphenous vein are then sutured between the aorta and the coronary arteries by passing the block or the obstruction (Each of these is known as a graft The number of grafts required is determined by the number of main vessels blocked, which is determined by coronary arteriography) The heart beat is then restored and the patient is disconnected from the heart-lung machine as soon as the heart starts beating effectively The chest and leg wounds are then closed systematically

Preparation for surgery

Best results are obtained only if the patient is optimally prepared for surgery both physically and mentally Patient and family counselling is part of the preoperative preparation to allay the fears of the patient and his family members and also to gain the patient's confidence The physiotherapist plays an important role in preparing the patient for surgery

Common Problems during this period

(a) Chest pain This results from the movement of the ununited cut-ends of sternum (breast bone) This pain usually subsides within six to eight weeks by which time the cut ends of the bone unite Analgesics like Proxyvon or Analgin will relieve this pain

(b) Swelling of the legs This results from venous congestion in the legs after removal of saphenous vein To prevent this the patient must wear elastic stockings or a crepe bandage whenever he is standing or walking When he is sitting he must keep his feet elevated on a stool Swelling usually subsides by 3-6 months

(c) Breathlessness The body usualy takes a few weeks to recover from the effects of a major surgery Till then it is wise not to over exert and to take rest at frequent intervals This usually subsides in 6-8 weeks

Do s and don'ts after surgery

(a) Do not smoke at all It accelerates coronary artery disease and may lead to blockage of the grafts

(b) Drinking alcohol is best avoided but if it cannot be given up restriction to two ounces a day is desirable

(c) Heavy exertion like driving lifting weights, cycling etc should be avoided for at least six weeks after surgery

(d) Sex There is no restriction on sex is long as the patient feels fit Undue pressure on the sternum, however must be avoided in the initial period after surgery

Teach the patient breathing exercises and leg exercise which must be strictly performed in postoperative period A thorough check is made for any associated illnesses like diabetes hypertension chest infection dental infection etc which are fairly common These have to be controlled adequately before surgery to prevent any complication The patient is usually admitted a few days prior to the scheduled date for operation so that all the above preparations can be made In addition the patient gets acclimatized to the hospital atmosphere and also gains confidence and strength by seeing and talking to patients who have already undergone surgery

The post-operative course

The first 24-48 hours are spent in intensive care unit after which the patient is transferred to the postoperative ward The patient is able to eat a light meal in the following morning after the surgery and by evening he is made to walk about the ward It is during this period that the maximum cooperation of the patient is required Breathing exercises that have been taught must be performed religiously and the patient must make every effort to be up and about The physiotherapist plays an invaluable role during this period Over the next few days the patient is gradually able to perform routine activities and is

discharged after removal of all stitches on the tenth day after operation A certain feeling of physical weakness is expected during the postoperative period However a good diet and graded exercise can soon overcome this problem By six weeks the patient should be able to return to his work

Experience at the All India Institute of Medical Sciences

Over the past three years more than 160 patients have undergone coronary artery bypass surgery at the All India Institute of Medical Sciences The number is increasing rapidly and currently we are performing four to five such operations every week in addition to other types of open heart surgery The patients who have undergone surgery have mostly been referred when they have been severely symptomatic and have advanced disease Thus more than 80 per cent of these patients have had severe triple-vessel disease 28 patients had obstruction of the left main coronary artery disease which as has been mentioned carries a very high risk About 10 patients were under 45 years of age

On an average every patient has received four grafts In addition some patients required other procedures like endarterectomy in 32 valve replacement in 6 and removal of a left ventricular aneurysm in 9 patients

Despite the severity of disease in these patients the results have been very good The overall mortality is 3-4 per cent which is comparable to reports from the advanced centres in the west If patients come in the early stage of the disease the risk of the operation is negligible

On follow-up 90 per cent of the patients are free of angina and have returned to gainful occupation Repeat coronary arteriography done in a small group of patients shows that the grafts are patent in the majority of the patients

Coronary bypass surgery at the AIIMS costs each patient approximately Rs 12 000 - This is towards the cost of the disposable items required during the surgery No charge is levied on account of operation This is a negligible amount compared to the cost of getting the same surgery done in USA which is Rs 3 3 to 3 5 lacs We believe that coronary bypass surgery is a safe effective and reliable mode of treatment for coronary artery disease and we at the Institute are capable of offering it safely and economically to the public

(Based on public lectures of All India Institute of Medical Sciences New Delhi)

Organisation of the rural poor

THE MINISTRY OF LABOUR Government of India, had introduced a scheme to train honorary rural organisers to help the rural poor particularly the labour and educate them of the value of organisation, their duties and responsibilities as workers and introduce them to various rural development programmes like IRDP, NREP, TRYSEM and the Special Component Plan for development of scheduled castes as well as the tribal sub-plan

The scheme which was introduced in 1981-82 in 450 blocks across eight States, is now being extended to 1,000 blocks in 15 States and Union Territories The Government feels that association of local level non-government organisations would help implementors of the schemes to identify proper candidates being selected as honorary rural organisers which is vital for the success of the scheme

Wood-burning stove

THE RURAL ENERGY LABORATORY of the Central Power Research Institute Bangalore India has designed a wood burning stove of 30 per cent efficiency The stove consists of a cylindrical combustion chamber covered at the top and bottom with slotted plates of a particular pattern Inside the chamber a mesh is fitted to serve as a fuel-burning deck The result is sustained and complete burning of the fuel with less luminous less smoky and well directed heat

The tests conducted showed the average fuel consumption to be 0 5 kg per hour The stove has been designed in three different sizes to suit families of different strength The estimated costs are Rs 30 50 and 60 respectively □

(Continued from page 5)

The last point I wish to put forward for your consideration relates to the adoption or adaptation of the human resource development technology Many of the tools and techniques often advocated are those which are relevant in the economically advanced countries It is necessary to examine whether they are equally applicable in our country, particularly in view of the abundance of man power and state of development of our technology Every effort should be made to develop this technology indigenously to suit our conditions This will call for patient and persevering efforts We should consider how such an effort can be organised

We are at the threshold of the Seventh Plan It is the right time to identify the human resource development effort needed to achieve the objectives underlying the Plan There are high hopes and expectations of economic betterment The attitude of helpless acceptance of poverty is no longer there People have become conscious of their rights and demand speedy betterment of their conditions The aspirations have to be met within a reasonable time through rapid economic development and the human resources development is a sine qua non for this □

BOOKS

Material management

INTEGRATED MATERIAL MANAGEMENT - oncepts and Cases by M D Patel, S A Chunawala nd D. R. Patel, Himalaya Publishing House, Bombay. ages 610 Price Rs. 125.00

A COUPLE OF DECADES back, the inventory ontrol manager was nothing more than a glorified lerk with little or no training His place had no ecognition in the hierarchy of company management lis work at best was haphazard unchallenging and iore by guess than by system His main worry was o ensure sufficient lock of materials in stores In ontrast to this today's material manager is more often than not concerned with how to reduce inventory so that the cost of maintainance may not be adversely affected As such, the present-day inventory ontrol involves (i) laying down of a procedure to procure in adequate supply of the required materials ii) evolving a system to maintain and protect the naterials after they are received and (iii) devising a nethodical way of issuing materials when and where hey are required These three functions of procuring naintaining and issuing materials are indeed three najor functions of effective inventory management

This book under review deals with precisely the aforesaid parameters in materials management The collective wisdom of the three authors has resulted in bringing out an outstanding book on the subject five parts and 28 chapters, the various ramifications and technicalities involved have been quite sufficiently discussed analysed and explained A number authors and authorities have been quoted to substantiate the themes

According to the authors as far as organisation material management is concerned it has remained matter of controversy on two important issues viz he inter-relationship of purchasing and materials anagement and the treatment of the subject as ubordinate to manufacturing Also generally urchasing and materials management are used interchangeably The authors make a plea for treating aterial management as distinct from manufacturing anagement The topics dealt in the book are purchasing materials planning forecasting for materials anagement etc In materials planning the PERT nalysis has been elaborately handled in a lucid style likewise forecasting has been explained in statistical ormulas Quality quality assurance and reliability are discussed with the help of several illustrations In the hapter on pricing theory the pricing practices have been described in their theoretical framework as well s in their practical application

It is true that in materials management the aspect f purchase timing has now become quite crucial nd important The authors have rightly devoted a full hapter to this issue Inventory and stores management have been treated with a medley of theories nd statistical analyses The legal aspects of purchasing and allied activities make an interesting reading Another useful chapter is on government as a purchaser

The book contain 16 cases which have been analysed briefly to explain the various topics pertaining to materials management The cost of physicall maintaining the inventory represents a relatively large expenditure in the form of storekeeper's wages, cost of storage facility, interest, clerical assistance, and the like In addition to this, there are other costs such as losses resulting from price declines obsolescence deterioration breakages unnecessary space requirements unwarranted utilisation of equipment and labour, and extra taxes and insurance In view of this it is necessary that the end objective of inventory management must be guided by the need for having correct quantity of materials on hand with a minimum expenditure of investment consistent with expediency

It is worthwhile that material management is made a part of production control in order to maintain a flow of materials needed for the efficient and continuous operation of the production line Therefore its coherence and coordination with production programmes are of utmost necessity in the present times of large-scale production that takes place generally with advanced technology

Navin Chandra Joshi

Builders of Modern India K M Munshi by V B Kulkarni, Publications Division New Delhi Pages 291 Price Rs 25 00

THE VOLUME UNDER REVIEW by virtue of it being a recent addition to the series goes to signify beyond any shadow of doubt that the said series is as live as ever and the editorial outfit of the Publications Division is veritably a professional force to reckon with The qualities of a flawless print and simple get up have been meticulously maintained

The innumerable stalwarts of our freedom struggle from Tilak downwards have been acknowledged as men of parts as well as letters and K M Munshi is no exception The volume affords us a thread bare biographical exposition of K M Munshi—the lawyer, the freedom fighter the Minister and Governor and the creative writer He was a noted figure both in Gujarati and Indo-Anglian fiction His outstanding contributions to the national causes before and after independence have been highlighted at the proper juncture and in the proper perspective If on the one hand he was one of the Chief Architects of India's Constitution a competent Minister and Governor he had on the other hand the rare knack of adhereing to his independent views and convictions whereby he could strike a way of his own away from the mainstream of age-old stagnating politics of the Indian National Congress His switch over to Swatantra Party is a point on instance

Kulkarni's highly stylistic narrative does more than mere justice to his subject matter and makes it a highly readable and interesting lot for a paltry price

R P Rahi